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CANADIAN IMPORT PATTERNS FROM THE DEVELOPING COUNTRIES

by

WILLIAM ROBERT WILSON

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF SCIENCE

IN

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FACULTY OF GRADUATE STUDIES AND RESEARCH

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ABSTRACT

In this study, an attempt is made to perform three tasks. First, the recent export performance of the developing countries is described and research in the area summarized. Second, a framework is constructed for measuring the trend performance of export sales to Canada and for analyzing certain factors which may affect differential performances. Finally, the export performances of particular developing countries are investigated empirically within this framework.

Imported commodities are aggregated into five commodity categories: (1) food, feed, beverages, and tobacco; (2) raw materials; (3) fabricated materials; (4) end products or manufactures; and (5) special transactions. The trend in the value of imports from developing and developed countries is based on the value of each commodity category relative to the total imports. The degree of earnings instability is calculated for developing and developed countries for each of the commodity categories and for total exports.

The ability of the developing countries, as a group, to increase their relative share of the Canadian import market is measured for total value and for the various commodity categories. The impact of the growth in the Canadian economy on the value of imports within a commodity category is estimated using ordinary least squares regression techniques, with Canadian GNP as the independent variable.

A time-series approach is used to generate a measure of export performance for twenty-five developing countries, comprising 80 percent of the total value of Canadian imports from developing countries over the

study period (1960-1975). The differential export performance of these countries are analyzed by focusing on three explanatory factors: (1) the degree of commodity concentration in the export-mix of a country, (2) the type of products exported, and (3) the degree of earnings instability.

Empirical results include the following. (1) There was evidence of a major shift in the value share of manufactures imports relative to the other commodity categories. (2) The developing countries were generally outsold by the developed countries in absolute value terms, but the developing countries did increase their share of the import market in each of the commodity categories, with the exception of the food, feed, beverages, and tobacco category. (3) The developing countries had a greater degree of earnings instability in every commodity category and in total value terms than did the developed countries. (4) Growth in the Canadian economy contributed to a far greater increase in the value of imports from developed than from developing countries in every commodity category, with the exception of the raw materials category. (5) There was evidence that commodity concentration was directly related to earnings instability and inversely related to market performance. (6) An export-mix concentrated in raw materials was found to be associated with earnings instability and relatively poor market performance. (7) An export concentration in manufactures was associated with earnings stability and positive market performance.

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CHAPTER I

INTRODUCTION

Some Preliminary Observations

In recent years, increasing interest has been shown in the economic growth of developing nations.[1] This interest precipitated the United Nations' declaration of the 1960's as the "First Development Decade," which led to the "Second Development Decade," -- the 1970's. This and other efforts to focus attention on economic growth in the Third World have in large part met with indifference from the developed countries. However, there is no economically logical reason to expect the developed countries to altruistically make concessions to developing countries if such concessions are not in their own best interests, at least in the long-run.

Recognizing the need for both developed and developing countries to gain from concessional efforts to stimulate economic growth within developing countries, economists suggested realignment of world production patterns in accordance with the theory of comparative advantage. This approach has led to increasing demands that the developed countries remove their trade restrictions. The Third World cried "Give us trade, not aid." Lester B. Pearson pointed out: "There is little logic in encouraging growth in developing countries through aid and other measures while imposing barriers against imports . . ."[2]

One realistic means to achieving meaningful increases in the standard of living of developing countries would be to increase their share in international trade.

The Developing Countries

Although it is not possible to define concisely a typical developing country -- each has its own particular anomalies — it is possible to note certain common features. The following characteristics provide a useful starting point for the examination of the trade performance of the developing countries as a whole. The most common measure of development is in terms of per capita income. There are serious shortcomings inherent in this measure, but its use persists due to the lack of a better measure, because it is correlated with other measures of economic growth, and because it provides at least a crude measure of the economic well-being of the domestic inhabitants.[3] Those characteristics which in large part are responsible for the relatively low per capita income in these countries should also be discussed. The following characteristics are not extant in every developing country, but are generally common to developing countries.[4]

Production methods in developing countries tend to be primitive and because of the subsistence level existence of the majority of producers, innovation and technological change are usually resisted.[5]

Production of those primary products necessary to sustain existence leaves few resources for developing secondary and tertiary production potential. Because of this, a high concentration of production is primary product oriented. Most residual resources are ill-suited for the development of non-primary production and consequently these resources are likely to be used to expand the domestic supply of primary

products. This expansion of primary product production is generally the main source of export earnings.

In agriculture the norm is one of subsistence production, with peasant farmers working small acreages, sometimes rented from absentee landowners who display little interest in changing production techniques. The peasant farmers often face disincentives for improving yields through technical change; although the farmers take all the risk associated with implementing any change, they stand to gain only a portion of any resulting gain. The very nature of subsistence farming implies that there is little margin for error in the decision-making process. Thus, the subsistence farmer is apt to be justifiably wary of change.

Productivity in the agricultural sector of developing countries tends to be so low that some observers believe the marginal product of farm labour is zero or even negative.[6] The existence of surplus labour has fostered one important theory of economic development which views the development process in terms of the transfer of labour from the subsistence sector, where it has a non-positive marginal product, to the industrial sector, where it has a positive marginal product.[7] This process of sectoral labour migration is likely to be small in developing countries, because industrial sectors tend to be small or nonexistent. Traditional macroeconomic analysis, which focuses largely on aggregate demand, is an inappropriate analytical tool for developing countries with such dualistic structures.

With such dualistic structures the remaining areas open to analysis are the factors of supply and the mechanics of production and distribution. These areas contain a large number of obstacles to economic growth, primarily supply shortages. There is likely to be a shortage of skilled labour, management personnel, and professionals to provide

ancillary services, as well as a shortage of funds for the requisite social overhead investment to train people to meet these needs. The subsistence nature of production is not likely to generate any domestic savings; as a result investment capital will be in short supply. Existing transportation and communication facilities may not be sufficient to facilitate and support economic growth.

The growth process in developing countries is further inhibited by the absence of effective backward and forward linkages and by income leakages. Growth in a dynamic sector will not affect growth in other sectors of the economy because absence of the necessary linkages due to the result of inadequate communications or transportation facilities, or poor domestic market development removes any possible stimulus transferal. Import spending and the repatriation of earnings by foreign-owned companies cause leakages from the circular flow of income and spending. Due to the leakages and absence of effective linkages, income generation cannot be relied upon to have the same impact on aggregate demand as it would have had in a developed country.

Economic characteristics impeding economic growth are substantially reinforced by the social and demographic characteristics of the populace in many developing countries. Population growth rates tend to be higher in developing countries than in developed countries and the literacy rates are lower.[8]

To summarize, the growth process in developing countries is hindered by supply bottlenecks, the absence of sectoral linkages, by the leakage of income, and by a population not yet suited to the rigors of the growth process.

The Importance of Exports to Developing Countries

International trade may increase the real income of a country in the sense that trade could facilitate the consumption of commodities beyond the country's production possibility curve, which is based on available domestic resources. The other major gain through trade is the possible reduction in the opportunity cost associated with imported commodities.

There are several reasons to expect the gains through trade are more important in the case of developing countries. First, the lower the initial real per capita income, the more highly valued should be any increase.[9] Second, in the absence of a sufficient domestic market, trade may provide an avenue for production within developing countries to optimize production levels, thereby attaining economies of scale, lowering per unit production costs, and increasing price competitiveness.[10] Third, there are apt to be products essential to economic development that are simply not available within a developing country. The opportunity cost of such products is infinite. Trade is one way of obtaining such products. Finally, because differences between developing countries and their potential trading partners are so substantial, it is unlikely that any reduction in the opportunity cost of imports will also be substantial. More specifically, developing countries tend to differ significantly from developed countries both in their endowments of the factors of production and in available technology. Both of these factors can create differences in opportunity costs that make mutually beneficial trade possible.

For these reasons trade has often been cited as the most viable avenue for economic growth in the developing countries, thus the

rationale for this study of the growth of export earnings in developing countries.

The Objectives of the Study

The two fundamental objectives of this study are: (1) to detail the export performance of developing countries exporting goods to Canada since the start of the First Development Decade in 1960; (2) to examine factors affecting the export performances of these developing countries.

A secondary objective of this study is to provide a detailed examination of Canada's commodity import pattern with developing countries during a period when Canada expressed a desire to facilitate the economic growth of these countries by removing existing domestic trade encumberances. It is hoped that this study will provide an indication of Canada's real attitude toward the sales aspirations of the developing countries.

Footnotes

1. A. N. Agarwala and S. P. Singh (Eds.), The Economics of Under Development (New York: Oxford University Press, 1963).

2. W. Bain. "Canadian Trade Policies: How Do They Affect LDC's?" Cooperation Canada, No. 24 (1976), p. 12.

3. The main problem in using per capita income as a measure of economic development is that it says nothing about the nature of income distribution. Another problem is that differences among per capita income figures for various countries or for various time periods may in reality not be indicative of relative stages of economic development, but merely of different costs of living. Also, the degree to which the economy is market-bound will affect the accuracy and responsiveness of the index.

4. The following discussion borrows heavily from Theodore W. Schultz, Trahsforming Traditional Agriculture (New Haven, Conn.: Yale University Press, 1964).

5. This is not to say that producers are necessarily inefficient -- indeed the case is often just the opposite — but it does mean that introducing change to the existing production patterns will be more difficult because the producer has much less margin for error.

6. For example, see: W. A. Lewis, "Economic Development with Unlimited Supplies of Labour," Agarwala and Singh, op. cit.

7. A rigorous development of this model is contained in G. Ranis and H. Fei, "A Theory of Economic Development," American Economic Review, LI (1961), pp. 533-65.

8. In recent years population growth rates have averaged 2.5 percent in developing countries while in developed countries the rate was only 0.9 percent. See U. S. Government Publications. Agency for International Development, Gross National Product Growth Rates and Trend Data by Region and Country (Washington: Government Printing Office, May, 1975).

9. This argument is developed by Simon Kuznets, "Problems in Comparing Recent Growth Rates for Developed and Less Developed Countries," Economic Development and Cultural Change, XX (1971-72), p. 193.

10. For a thorough discussion of the role that the development of import-substituting and export-oriented industry has historically played in the developmental pattern of various LDC's, see: Irma Adelman and Cynthia Taft Morris, Economic Growth and Social Equity in Developing Countries (Stanford: Stanford University Press, 1973). The authors provide empirical evidence to support the posit that domestic production geared to international markets has in the past not only contributed positively to the economic growth of the LDC's, but has also contributed to the equity aspect of this increase in national income. The industrialization has contributed positively to income distribution.

CHAPTER II

A REVIEW OF RECENT LITERATURE CONCERNING THE EXPORT PERFORMANCES OF DEVELOPING COUNTRIES

This chapter is an attempt to present a concise account of the literature relating to the recent export experience of the developing countries. The presentation focuses on such characteristics as commodity composition, commodity concentration, and the geographical destination of exports as well as trends in export earnings.

Characteristics of the Exports of Developing Countries

It is useful to begin by considering the commodity composition of the exports from developing countries in recent years. The commodity composition of exports by broad commodity groups and average annual percentage changes for each group are shown in Table 1 for the years 1953 to 1973. The data illustrate the dominance of primary commodities in the exports of developing countries. The share of primary commodities relative to total exports was 91.5 percent in 1953-55 and declined to 76.9 percent by 1973. Food, feed, beverages, and tobacco comprised the largest commodity category at the beginning of the period, but by 1973 it had been equalled by the raw materials category and surpassed by the fuels category.

Though exports of manufactures have accounted for a relatively small share of the exports of developing countries, they clearly have grown more rapidly than have exports of primary commodities as a whole

Table 1: Commodity Composition of Exports of Developing Countries by Main Commodity Group, 1953-73.

Category	Percentage of Total Exports					Average Annual Percentage Change			
	1953-55	1958-60	1963-65	1968-70	1973	1953-55 to 1963-65	1958-60 to 1962-65	1963 to 1968	1968 to 1973
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Food, Feed, Beverages and Tobacco	39.5	35.4	33.1	26.7	20.8	2.6	4.2	2.6	5.5
Raw Materials (including non-ferrous metals)	28.7	26.9	24.3	25.8	20.8	2.6	3.4	5.2	6.0
Fuels	23.8	28.8	30.8	32.9	39.3	7.1	7.0	8.9	4.6
Total Primary Commodities	91.5	91.1	88.0	81.8	76.9	3.9	4.9	5.7	1.6
Manufactures	7.6	8.5	11.4	17.2	21.7	8.6	12.4	13.5	8.5

Source: Columns 1, 2, 3, 6, and 7 were obtained from International Monetary Fund and International Bank for Reconstruction and Development, The Problem of Stabilization of Prices of Primary Products (Washington, D.C.: 1969), p. 16. The remaining columns are based on Contracting Parties to the General Agreement on Tariffs and Trade, International Trade (Geneva: GATT, 1970, 1971 and 1974-75).

or any of the primary commodity categories. As a result of this consistently superior performance, the share of manufactures rose from 7.6 percent in 1953-55 to 21.7 in 1973.

Despite this strong growth of exports of manufactures, their share in total exports is still comparatively small. When the distribution of the exports of manufactured goods is taken into account, it becomes apparent that the foreign exchange earnings of the majority of developing countries have been dependent almost entirely upon exports of primary commodities. In 1964, for example, 71 percent of the exports of manufactures and semi-manufactures from developing countries to developed countries were from ten exporting countries, leaving the remaining 29 percent to be divided amongst all other developing countries.[1] Moreover, two countries, Hong Kong and India, accounted for almost one-half of the total.

Furthermore, the range of manufactures exported from developing countries is not very extensive. In 1964 more than 45 percent of the manufactures exported from developing countries to developed countries consisted of textiles.[2] Some twenty items constituted nearly 90 percent of this trade flow of manufactures.

Similarly, exports of primary commodities to the developed countries have been highly concentrated in a small number of products, as shown in Table 2. The fourteen commodities listed in the table accounted for almost 55 percent of the total value of exports from developing countries during this period. In fact, the first three commodities -- crude petroleum, green coffee, and raw sugar -- accounted for 40 percent of the total value of exports from developing countries.

Table 2: Certain Primary Commodities Exports from Developing to Developed Countries, 1970-72.

Commodity	World Exports 1970-72 average $ million	LDC Exports 1970-72 average $ million	LDC Share of Total %	Share of Commodity in Total LDC Exports %
Crude Petroleum	18,000	17,005	94	29.9
Coffee	3,154	2,942	93	6.8
Sugar	2,602	1,934	74	3.3
Cotton	2,388	1,774	74	2.7
Rubber	1,958	1,296	66	2.0
Copper	5,005	2,240	45	3.5
Timber	2,304	340	15	.5
Iron Ore	2,344	1,048	45	1.6
Tea and Mate	621	545	88	.8
Rice	915	390	43	.6
Cocoa	1,007	856	85	1.3
Jute	142	134	95	.2
Tin	577	461	80	.7
Cotton Textiles	1,703	529	31	.8

Source: Trade Statistics (New York: United Nations, various years).

In addition to being dominated in commodity composition by a narrow range of primary products, developing countries primarily export to industrial countries. The distribution by destination of the exports of developing countries for the years 1964 to 1973 is shown in Table 3. Comparable information for the years 1950, 1955, and 1962 is presented in Table 4.

It is apparent that the developing countries have been highly dependent upon the developed countries as export markets for all the years for which data are presented. For the more recent period covered by Table 3, an average of 75 percent of the export earnings was derived from exports to the developed areas. Over the same period, intra-developing country trade accounted for only 19 percent of their export earnings, while Soviet trade accounted for 4.5 percent. In the earlier years outlined by Table 4, the developed market economies again were responsible for the bulk of export earnings of the developing economies, accounting for approximately 70 percent in each year. Intra-developing country trade averaged 24 percent, and trade with centrally planned economies was roughly 4.5 percent.

To summarize, in recent years the less-developed countries have relied heavily on the export of primary products for their foreign exchange. Furthermore, this reliance has been based largely on the ability to export these primary commodities to the developed countries. There is evidence of a slight but perceptible movement away from this dependence on primary commodities, though it is significant only for a few countries, despite the concerted efforts of many more countries. Considered as an aggregate, there does not appear to be any significant movement away from the displayed export market dependence on the developed countries.

Table 3: Percentage Distribution of Export Value of Developing Countries by Destination, 1964-73.

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1964-73
Developed Areas	75.4	75.7	76.5	78.5	78.7	71.6	72.1	73.3	73.1	73.9	74.9
Industrial Count.	69.7	69.8	70.8	72.6	72.7						
Other	5.7	5.9	5.7	5.9	5.9						
Developing Areas	18.9	18.1	17.8	16.9	16.4	20.8	20.0	19.8	20.7	19.8	18.9
Oil Exporters	3.5	3.5	3.2	3.4	3.1						
Other	15.4	14.6	14.6	13.6	13.3						
Soviet Areas	4.2	4.8	4.4	3.6	3.4	5.4	5.7	5.1	4.5	4.3	4.5
Unclassified	1.5	1.4	1.3	1.0	1.5						

Sources: 1964-68. International Monetary Fund and International Bank for Reconstruction and Development, Direction of Trade Annual 1964-68, (Washington: I.M.F., various years), p. 32.

1969-73. Contracting Parties to the General Agreement on Tariffs and Trade, International Trade, 1974-75 (Geneva: GATT, 1974-75), p. 4.

1. The disaggregation for 1969-73 was not available.

Table 4: Percentage Distribution of Export Value of Developing Countries by Destination, 1950, 1955 and 1962.

	1950	1955	1962
Developed Market Economies	69	72	72
Developing Market Economies	26	24	22
Centrally Planned Economies	3	3	6

Source: United Nations, Department of Economic and Social Affairs, World Economic Survey 1963, Part I: Trade and Development: Trends, Needs and Policies (New York: United Nations Publications, 1964), p. 11.

1. For more recent figures see Table 3.

Factors Relating to the Stability of Export Earnings

It is not difficult to see what the effects of this concentration in a few primary products are likely to be. It is generally accepted that the prices of primary products vary more sharply than do the prices of most manufactures. Table 5 shows developing country export prices, volumes, and earnings to be roughly twice as unstable as those of industrialized countries over the given period. The dispersion about the mean is significantly greater in the developing country group, suggesting that there are particular developing countries with very high degrees of instability.

Abstracting from changes in commercial policy and transportation costs, export proceeds can be affected by two kinds of factors: (1) factors that affect demand for and supply of all products, and (2) factors that affect only individual products. A major factor in the volatile character of primary product prices lies in the short-run inflexibility

Table 5: Exports from Industrial and Developing Countries: Average Fluctuation Indices and Dispersion Around the Average, 1950-65 and 1953-65.

	Average of Fluctuation Indices[1]		Dispersion Around the Average[2]	
	1950-65	1953-65	1950-65	1953-65
	%	%	%	%
Industrial Countries				
Prices	3.7	2.1	1.1	0.6
Quantities	5.6	4.5	2.7	3.3
Earnings	6.2	4.2	2.1	1.6
Developing Countries				
Prices	8.8	6.8	3.1	2.8
Quantities	9.5	8.0	8.4	4.5
Earnings	11.8	9.6	7.1	6.1

Source: G. K. Helleiner, International Trade and Economic Development (Baltimore: Penguin Books, 1972), p. 79.

1. The fluctuation index employed is the average annual percentage deviation, neglecting sign, from the trend, which is estimated by fitting a linear relation between time and the logarithm of the annual observations.

2. Standard deviation from the mean.

of both output and demand in relation to price changes. With both agricultural and mining products, the response of output to changes in prices should be low relative to the output elasticities of manufactures.

A low supply elasticity means that any change in demand for a product will induce a disproportionately large fluctuation in price. At the same time, a low price elasticity of demand means a change in supply, regardless of cause, will affect a sharp change in price. Thus, low price elasticities combined with uncontrolled variability in demand, supply, or both provide a satisfactory explanation for the sharp instability in both prices and proceeds of primary products.

Income changes comprise the most important factor affecting the demand for and supply of all export products. For a given change in world income there will be a related change in the demand for all internationally traded goods. The particular change in demand for a product will depend on its income elasticity of demand. The degree of commodity concentration itself is related to income-induced fluctuations in export earnings only to the extent that concentration in a few products will cause the relationship between export earnings and world income to depend upon the income elasticities of demand for a few rather than many products. It is not possible through diversification to totally eliminate variations in export proceeds resulting from changes in world income.

The second category of factors affecting export proceeds are those which act upon the demand for and supply of particular products. The relevant factors, inter alia, are changes in tastes, technology, weather, and known resources. Change in these variables will likely have a direct and specific affect on the demand for and supply of a particular product. For example, the development of an acceptable synthetic substitute for a given primary product may result in erosion of that

primary product's market share, but may have little impact on any other primary product.

The high degree of export commodity concentration characteristic of most developing countries causes export proceeds to be especially susceptible to commodity specific impacts. Michaely calculated indexes of stability for quantities and unit values and found that the degree of fluctuation in prices of a country's exports was determined by two kinds of factors -- the degree of export concentration and the characteristics of the particular commodies exported.[3] He found a positive relationship between concentration and price instability, though not as strong as *a priori* reasoning had led him to expect. The empirical evidence did not permit him to conclude that export prices of countries with a primary product export concentration would inherently be more unstable than the export prices of countries with a manufactures export concentration.[4]

Michaely saw the same factors at work in the case of export volume as in export prices, except that intra-country developments were seen as being of greater importance in influencing volumes than prices. Furthermore, export diversification will not always have a neutralizing effect on the impact of domestic changes on export volumes. In a situation of sustained inflation the diversion of goods to domestic markets will be more pronounced in a country that exports manufactures than in a country predominantly exporting primary products. In a country with export diversification, domestic markets for many of the exported products will be large relative to the supply of these particular products. This is apt to be the case because of the low ratio of their production to national product and the likelihood that the products are manufactures. In a country with export concentration, on the other hand, domestic markets for these exported products are apt to be small relative to their

exports because of their relatively high ratio of production to national product and the likelihood that they will be primary products.

Michaely found that fluctuations in price were on the average higher than were fluctuations in volume. Furthermore, he found a low but positive rank correlation between export commodity concentration and fluctuations in export volume. The correlation coefficient (.374) was slightly lower than that between commodity concentration and price fluctuation.[5] The work by Michaely does not, however, permit one to discriminate between the effects of concentration per se and the effects of the particular commodity composition on export stability.

Surprisingly, Coppock found that the correlation coefficient between commodity concentration (the Gini-Hirschman index) and the export instability index was very low (+.04).[6] Coppock did find, however, that when the countries were ranked from low to high according to the commodity export concentration index and the median export instability indexes were determined, a pattern emerged. In the trichotomized series, the median value of the export instability index of each third rose as the commodity concentration increased. Coppock states that

> this method of analysis gives some support for the view that the more highly concentrated the exports, by commodity groups, the greater the instability of export proceeds. This result is what one would expect, since [export] diversification presumably reduces the chances of fluctuations [in export proceeds].[7]

This technique does not isolate the relation between concentration and stability of export earnings because the resultant correlation coefficient reflects not only the relation between commodity concentration and the stability of export earnings, but also the direct relation between commodity concentration of exports and the degree to which these exports are made up of primary products. The low correlation coefficients between commodity concentration of exports and stability of export earnings found

by Coppock are in some measure a result of the relationship between concentration of exports and the commodity composition of exports. As a consequence it is likely that Coppock's findings understate the true effect of concentration on the stability of export earnings.

MacBean emphasized that the relative degree of instability has not been as great as traditionally believed and demonstrated this by dividing all the countries (except Soviet countries) for which Coppock had computed indexes of instability into a group of "rich" and a group of "poor" countries.[8] Developing countries' export sales do, however, have a greater degree of instability than export sales of the developed countries. MacBean attempted to determine the factors contributing to this instability differential. MacBean considered three causal factors: geographic concentration, primary and non-primary commodity composition of exports, and commodity concentration of exports. He anticipated that each of these factors would be positively related to the instability of export sales. However, both simple correlation analysis and multiple regression analysis revealed no significant relationships. At best, commodity concentration and the proportion of primary goods in total exports were very weakly related to export instability. Contrary to a priori expectations, the relationship between geographic concentration and export instability was found to be negative.[9] Rather, instability could be explained in terms of particular economic policies pursued in that country, by a war, by internal civil strife, or by a concentration in specific commodities that had been hyper-susceptible to instability.

The relation between export stability and domestic variables was seen by MacBean as being weak for two reasons. First, the foreign trade multiplier had a low value in developing countries primarily because of high marginal propensities to import.[10] The second reason concerns the

structure of distributed lags, that act temporally to spread the impact on the economy of a change in export income.[11]

From the above studies, it would seem that the recent instability of export earnings of developing countries as a group has been somewhat overstated. This does not mean, however, that the markets for certain commodities and the export earnings of certain countries were not highly unstable.

Trends in Export Earnings

In this section the focus of attention shifts from short-run stability of export earnings to a survey of studies that deal with the long-run growth of exports of developing countries and trends in the shares of these countries in world exports.

Table 6 shows trends in total export proceeds of developing countries in recent years. For purposes of comparison the same information is provided on the export proceeds performance of the industrial countries. Looking at the value of total world exports, it is apparent that the export proceeds of both groups increased over the twenty-five year period shown. Exports from industrial areas increased about twelve times, while the value of exports from the developing countries increased about four and one-half times, from $24.4 billion to $212.4 billion. Certain ramifications of these differential rates of increase are evident in changes in shares of the two groups in world export earnings. The share of the developing countries declined throughout the period, falling from 31 percent in 1953 to 24 percent in 1975, while the share of the industrial areas increased from 59 percent in 1953 to 64 percent in 1975. An analysis of the trade flows by area grouping shows that the decrease in the share of the developing areas and the concomittant

Table 6: Trade Within and Between Industrial and Developing Areas, 1953-75.

Destination / Origin	Year	Industrial Areas		Developing Areas		Total World	
		Value[1]	Percent	Value[1]	Percent	Value[1]	Percent
Industrial Areas	1953	28.99	37.1	15.95	20.4	45.82	58.6
	1955	35.14	38.5	18.52	20.3	54.91	60.1
	1957	43.81	40.0	22.94	20.9	68.69	62.7
	1959	45.83	40.4	21.30	18.8	69.42	61.2
	1961	56.93	43.2	24.01	18.2	83.91	63.7
	1963	67.32	44.6	25.21	16.7	95.96	63.6
	1965	87.57	46.9	25.74	13.8	123.26	65.9
	1967	103.52	48.2	28.65	13.3	143.58	66.9
	1969	138.09	50.5	35.50	13.0	186.58	68.3
	1971	179.02	51.8	45.10	13.0	240.80	69.6
	1973	293.05	51.0	69.50	12.1	392.25	68.2
	1974	374.95	44.2	107.05	12.6	526.10	62.0
	1975	380.65	43.3	129.30	14.7	560.90	63.8

Table 6: Continued.

Destination Origin Developing Areas	Year	Industrial Areas		Developing Areas		Total World	
		Value	Percent	Value	Percent	Value	Percent
	1953	17.76	22.8	6.27	8.0	24.43	31.3
	1955	19.31	21.1	7.10	7.8	27.05	29.6
	1957	20.88	19.1	7.74	7.1	29.53	27.0
	1959	21.32	18.8	7.28	6.4	29.73	26.2
	1961	22.50	17.1	7.70	5.9	31.95	24.3
	1963	25.90	17.2	8.39	5.6	36.19	24.0
	1965	25.49	13.6	7.73	4.1	36.51	19.5
	1967	28.74	13.4	8.21	3.8	40.06	18.7
	1969	35.54	13.0	10.33	3.8	49.61	18.2
	1971	44.50	12.9	12.10	3.5	61.10	17.7
	1973	80.85	14.1	21.70	3.8	109.40	19.0
	1974	163.90	19.5	46.45	5.5	222.65	26.5
	1975	152.55	17.4	47.40	5.4	212.40	24.2

Source: 1953-66 data: Secretariat of the Contracting Parties to the General Agreement on Tariffs and Trade, International Trade 1966 (Geneva: GATT, 1967), p. 6.
1967-73 data: Idem, International Trade 1974/75 (Geneva: GATT, 1975), p. 4.

1. Values are in billions of dollars f.o.b. percentages are percentages of world exports.

increase in the share of the industrial area is in large part due to the increase in trade among industrial areas. Trade among the industrial areas is the largest value share of any category shown and has been growing most rapidly over time. The second fastest growing category has been exports from industrial to developing areas. Exports from developing to industrial areas has been third, while trade among developing areas has been the most sluggish.

Concerning the inability of developing countries as a group to share fully in the dynamic growth of world trade. Most economists attribute this phenomenon either to conditions of supply within the developing countries or to demand conditions in the industrial countries. Nurkse cites six reasons why growth in income in the industrial areas has not induced at least a proportional growth in imports from developing areas:[12] (1) There is an omnipresent shift in the industrial countries from light to heavy industry and the resultant proportional decline in the content of raw material in final product. (2) Growth in the demand for raw materials has lagged behind increases in national product in many industrial countries because of the ever-increasing share of the service sector in the national product. (3) In the case of agricultural products, there is a tendency toward low income elasticity of demand. (4) Various policies designed to protect the domestic agricultural sector of certain industrial countries have hampered exports of agricultural products. (5) There have been economies of scale in the industrial use of raw materials. (6) Industrial countries tend to develop and substitute synthetic materials for natural raw materials. The aggregate effect of these six factors has been a retardation in the export growth of developing countries.

Cairncross submits that these factors do not adequately explain the poor export performance of developing countries.[13] He contends that the displaced light industries have tended to relocate in less-developed countries, implying that the less-developed countries are therefore in a position to export more and import less of those products peculiar to light industry. These changes would partially mitigate any reduction in raw material exports resulting from the transition to heavy industry in the developed countries. Nurkse's second and third factors, Cairncross argues, are not peculiar to the twentieth century and thus cannot reasonably be used to explain phenomena that are peculiar to the twentieth century. The fourth factor, agricultural protection, operates more on non-tropical than on tropical agriculture, and such protection is not solely accorded to agricultural products but is extended to manufactures as well. Cairncross does concede that the development of various synthetic materials has significantly undermined certain primary product exports (factor 6), but emphasizes that the development of synthetic material was likely induced by a rising world price, both relative and absolute, for the displaced primary commodity.

Cairncross goes on to refute Nurkse's basic contention that there was a decline in the less-developed countries' share in world exports over the period 1928 to 1957. The decline is significant only if the exports of petroleum-producing countries are omitted and any such omission, Cairncross states, is not reasonable. In addition, share trend over time varies with the selected time period. He cites Yates' empirical findings that over the period 1913 to 1953 the developing countries' share in world exports of both manufactures and primary products actually rose.[14]

Cairncross attempts to explain the sluggish growth in exports of the developing countries in terms of domestic supply conditions. He points out that Maizels' calculations indicate the primary goods price index rose by nearly 50 percent more in the non-industrial than in the industrial countries between 1937 and 1957. This price increase induced the development of synthetics and increased trade among industrial countries. Assuming that Maizels' calculations are correct, at least in order of magnitude, the problem reduces to why the non-industrial countries did not respond fully to these price movements. Cairncross cites two causal factors: the low elasticity of supply of primary products in developing countries, and the generally pervasive preoccupation of developing countries with industrialization. In large part, resources were being diverted from traditional export sectors to fund the development of a domestic industry geared to import-substitution.

Work by the Contracting Parties to the General Agreement on Tariffs and Trade (GATT) has supported the Cairncross view that the tendency among developing countries to concentrate development effort on an industrial sector, with the traditional sector functioning as a "milch cow," has generally had a negative effect on export proceeds.[15] This GATT study divides the non-industrial countries into two groups. The first, referred to as semi-industrialized, is comprised of eight relatively large and rapidly industrializing countries. The residual developing countries are in a non-industrial group. Table 7 shows the index numbers of export values for the period 1928-1955. It is apparent from this table that the export proceeds of the semi-industrialized group declined relatively more during the depression and rose relatively less after the depression than did the export earnings of the non-industrialized group. Although the GATT was not prepared to ascribe the

relatively poor export proceeds performance of the semi-industrialized group to industrialization preoccupation per se, they did suggest that the relative export sluggishness was due to "certain forms of such policies which carry with them an anti-export bias."[16]

Table 7: Index Numbers of Total Export Earnings, 1928-55.

	1928	1937-38	1955
Semi-Industrialized[1] Countries	100	69	196
Non-Industrialized Countries	100	82	276

Source: Contracting Parties to the General Agreement on Tariffs and Trade, Trends in International Trade: Report by a Panel of Experts (Geneva: GATT, 1958), p. 24.

1. Semi-industrialized countries are Yugoslavia, South Africa, Mexico, India, Finland, Brazil and Argentina.

The GATT study cites two other factors which have negative impacts on the export performance of non-industrial countries over this period. These were the existence or non-existence of preferential trading arrangements with major trading partners and the commodity composition of exports.

The effect of the commodity composition of exports on export sales was investigated by grouping various countries by their major export commodities. The four categories of commodities were minerals, agricultural raw materials, tropical foods, and non-tropical foods. This grouping revealed that the commodity composition of exports had in fact been a relevant factor in the export performance of non-industrialized countries from 1928 to 1955. As expected, the most favorable price, volume, and value trends were present in those countries with a

preponderance of minerals or tropical foods in their total export package, while those countries exporting non-tropical foods and agricultural raw materials had relatively poorer price, volume, and value performances.

Maizels considered the GATT study useful but severely constrained methodologically.[17] The first limitation is that the four category commodity grouping is so broad that it does not permit any meaningful comparisons among various groups of countries. The second limitation is that allowance was not made for the effects of price changes on the quantity of exports demanded from the primary producing countries.[18] Maizels circumvented the first GATT limitation by constructing indexes of world trade for the bundle of goods exported by each of eleven selected industrializing countries; a particular country's volume of sales was compared to the total sales volume for that bundle of exports in world markets.[19] He dealt with the second limitation by relating movements in prices of the bundle of exports for each of the eleven countries to movements in prices of these particular goods in world markets.

The resulting performance indexes vary greatly, but only in the case of Yugoslavia, an obvious situation of forced industrialization diverting resources from existing export markets, did the bundle of commodities perform much worse domestically than it did in world trade. Table 8 shows that the bundle of exports for the eleven semi-industrial countries combined performed as well as the comparable bundle in world trade. These results suggest that the export performance of semi-industrial countries relative to world trade in these same commodities was not as poor as suggested by the GATT analysis. Maizels contends that one important factor contributing to this trend was a tendency for the countries to move away from those commodities with persistent

sluggish world demand towards those with relatively dynamic demand.[20]

Table 8: Changes in the Value, Volume and Unit Value of Selected Exports from the Semi-Industrial Countries Compared with Changes in World Trade in the Same Products, 1937-38 to 1955.

	Value	Volume	Unit Value
Eleven Semi-Industrial Countries	283	101	286
World Trade	292	107	279

Source: Alfred Maizels, Industrial Growth and World Trade (London: Cambridge University Press, 1963), pp. 122-123.

1. Figures shown are index numbers for 1955. The base year is 1937-38. See footnote 19 for a list of the 11 semi-industrial countries.

Through a variety of regression techniques Maizels attempted to determine if there were any significant relationships between the share of a country's exports in the volume of world trade and either manufacturing production or the share of manufacturing production in real domestic product. Contrary to the GATT analysis the results revealed a positive rather than an inverse relationship between manufacturing and export performance.[21]

Further regression analysis led Maizels to conclude that during the period studied, the share in the volume of world trade had not significantly changed for any of the eleven semi-industrial countries, with the exception of Yugoslavia. This conclusion held regardless of whether or not the existence of preferential trading partners was taken into account.[22]

The studies that have been discussed have considered only indirectly the degree to which changes in export proceeds of developing countries are due to changes in international demand for the particular

products exported and the degree to which they are due to changes in the commodity composition of exports or to changes in market shares. The Secretariat of GATT considered these latter problems in its annual report for 1965.[23] It assumed that for any particular developing country, changes in export sales could be viewed in terms of three factors. The first factor was defined as the change in value of "traditional" goods exported by the country to world markets in some base year.[24] A constant share in world markets is assumed for these goods throughout the study period. The second factor was defined in terms of the difference between expected exports under a constant market share and actual exports of "traditional" goods. The third factor was a residual factor, defined as the difference between changes in exports of "traditional" products and changes in total export earnings. This was an attempt to provide a measure of the degree to which the country in question diversified its exports over the study period.

For each of the sixty-two less-developed countries, for regional subgroups of countries, and for all the countries combined, indexes of the three factors were calculated. The time period 1959-61 to 1964-65, is somewhat short for this type of study, but even with this limitation some interesting results were obtained. Little correlation was found between indexes for the first factor and indexes showing growth in total export proceeds. A more adequate explanatory variable for differences in the relative export sales performances of the various countries was the second factor, reflecting changes in market shares of the countries in the export of traditional products. Numerous countries that had better than average export sales performance records also had high third factor values. Although, there were some exceptions, there was some

indication that export diversification had made a positive contribution to better export sales records.

The factor relating constant-share growth of exports of traditional products dominated the other two factors in determining the performance of the sixty-two countries combined, but had little to contribute to differences in relative performances of the countries. Somewhat less important in explaining the export proceeds of the group of countries was the export diversification factor, while the changes in market shares of traditional commodities were only marginally significant.[25]

These results appear to indicate that any meaningful attempt to investigate the export performances of particular countries would need to consider export diversification and world market share changes for these countries. An adequate analysis of these factors depends on accurate information relating to conditions of supply in the particular country being considered.

One study oriented toward considerations of supply was that of Barend de Vries, under the auspices of the International Bank for Reconstruction and Development.[26] By judging countries' export performances on the basis of changes in their shares in major commodity markets, he attempted to eliminate the demand factor from his analysis. De Vries found that while major exports accounted for the dominant portion of the value of exports throughout the study period, minor exports were clearly the more dynamic, growing as a category at a rate more than six times that of major exports.[27]

The more important findings contained in de Vries's study include the following. First, countries with an initially small share of the world market for a major commodity had the greatest chance of

subsequently increasing their share.[28] Secondly, those countries with relative price stability tended to be more successful in expanding minor exports than those with inflation.[29] Thirdly, growth of both major and minor exports were related positively to growth of agricultural production.[30] Finally, the rate of increase in manufacturing production was directly related to performance in the minor export category. No significant relationship was found between the performance of major exports and the rate of increase in manufacturing production, leading de Vries to argue that industrialization per se does not militate against export performance.[31] He contends that the net effect of industrialization on exports is dependent upon the particular form that this industrialization takes.[32]

Footnotes

1. Michael Z. Cutajar and Alison Franks, The Less Developed Countries in World Trade (London: Overseas Development Institute Ltd., 1967), p. 73.

2. Ibid., p. 74.

3. Michael Michaely, Concentration in International Trade (Amsterdam: North-Holland Publishing Company, 1962), p. 16; p. 168. The index, F, is defined as:

$$F = (100 \Sigma_{t=2}^{t=n} / (p_t - p_{t-1}) / p_{t-1}) / (n-1)$$

where p = the price level; t = the year; and n = the number of years. The index for quantity is analogous.

4. Ibid., pp. 72-78.

5. Ibid., pp. 97-100.

6. Joseph D. Coppock, International Economic Instability: The Experience After World War II (New York: McGraw-Hill Book, Inc., 1962).

7. Ibid., p. 104.

8. Alasdair MacBean, Export Instability and Economic Development (Cambridge, Mass.: Cambridge University Press, 1966).

9. Ibid., 48.

10. Other reasons for the characteristic low foreign trade multiplier of developing countries include the usual repatriation of profits by foreign-owned firms, the fact that exports may include imports, and the imposition of taxes on the export sector.

11. Coppock, op. cit., p. 339.

12. Ragnar Nurkse, Patterns of Trade and Development in Problems of Capital Formation in Underdeveloped Countries and Patterns of Trade and Development (New York: Oxford University Press, 1967).

13. A. K. Cairncross, "International Trade and Economic Development," Kyklos, 13 (1960), pp. 545-558.

14. Lamartine Yates, Forty Years of Foreign Trade (New York: The Macmillan Company, 1959).

15. Contracting Parties to the General Agreement on Tariffs and Trade, Trends in International Trade: Report by a Panel of Experts (Geneva: GATT, 1958).

16. Ibid., p. 26.

17. Alfred Maizels, Industrial Growth and World Trade (Cambridge, Mass.: Cambridge University Press, 1963).

18. Ibid., p. 117.

19. Ibid., p. 118. The countries selected were Yugoslavia, South Africa, Turkey, New Zealand, Mexico, India (including Pakistan), Columbia, Chile, Brazil, Australia, and Argentina.

20. Ibid., pp. 119-124.

21. Ibid., p. 127. The analogy between this finding and the GATT analysis is not perfect because Maizels looked at export volume while the GATT finding was in terms of total value.

22. Ibid., p. 125.

23. Contracting Parties to the General Agreement on Tariffs and Trade, International Trade 1965 (Geneva: GATT, 1966), pp. 23-32.

24. There were forty-six commodities, the majority being primary products.

25. Ibid., pp. 29-30.

26. Barend de Vries, "The Export Experience of Developing Countries," World Bank Staff Occasional Staff Papers Number Three (Baltimore: World Bank, 1967). Also, Idem., "The Export Performance of Developing Countries," Finance and Development, V (1968), pp. 2-7.

27. De Vries, (1967), op. cit., p. 18. He distinguishes "major" exports as all those commodities accounting for greater than 5 percent of merchandise exports for one or more of the countries studied in the period 1950-63, and "minor" exports, are a residual category.

28. De Vries (1968), op. cit., p. 4.

29. Ibid., p. 5.

30. Ibid., p. 4.

31. De Vries (1967), op. cit., p. 35.

32. De Vries (1968), op. cit., p. 5.

CHAPTER III

METHODOLOGY

Some Preliminary Remarks

There are a number of fundamental problems facing a researcher in the field of international trade and the developing countries. One major problem is that international trade statistics are subject to relatively large errors of observation, or collection, as are the statistics for developing countries in general.

Another major problem is that the data required to test various hypotheses are not always available, or at least not available in a comparable format for a representative sample of countries over a sufficient period of time. As a result, the critical factor guiding the empirical investigation is the nature of the available data rather than a priori hypotheses, or at least the hypotheses are more loosely constructed than they would have been with a tighter data base.

Finally, the pure theory of international trade may be seriously limited in its applicability because of characteristics peculiar to developing countries. This sentiment, dealt with in some detail by Chenery and others, centers around the conflict between the comparative statics tenet espoused in both classical and neoclassical trade theory and the inherent dynamic aspects of the development process.[1]

These constraints have acted to reduce the number of empirical research methods open to the researcher. Thus, research in this area has tended to follow one of three main avenues. One is hypothesis

testing, where hypotheses have been constructed to incorporate the limitations of available data. Another research methodology has been searching the data for empirical regularities and then attempting to apply the economic theory to discovered trends. A third avenue is the case study approach, involving the intensive analysis of a single country. The major advantage of this last form over a comparative analysis type of study is that it will generally facilitate a greater degree of flexibility, due to the availability of data. This increased flexibility is gained at the expense of generality, however, it being somewhat foolhardy to attempt to apply statements based on specifics to a general format.[2]

This study is essentially a case study of Canadian imports from developing countries, an attempt to gauge the export performance of these countries vis-a-vis Canada and to examine certain factors affecting export performance. Although no attempt is made to extend beyond the analysis of the import pattern of Canada's trade with the developing countries, the results do provide an indication of how successful the developing countries have been in increasing their exports to one of the developed countries.

Objective 1:
Compilation of the Data Base

The data were collected on an annual basis for the years 1960 to 1975 from the Canadian Government agency's Statistics Canada publications.[3] The total value of Canadian imports from the developing countries -- all countries in the Middle East, Africa (except South Africa), Asia (except Japan), South and Central America -- was aggregated into five major commodity categories in accordance with the Standard International Trade Classification (SITC) employed by Statistics Canada. The

five categories are: (1) food, feed, beverage, and tobacco; (2) crude materials; (3) fabricated materials; (4) end products; and (5) special transations. This documentation was also completed for the developed countries (DC's), less developed countries (LDC's), and 25 selected less developed countries (SLDC's) as groups and for all countries in total.

Exports from the SLDC's which were the source of the largest value of Canadian imports over the period 1968-1972 were aggregated into the five SITC categories. Over the study period these 25 countries consistently represented approximately 80 percent of total Canadian imports from developing countries. To include the remaining 20 percent would necessitate examining all remaining developing countries which would have required excessive resources. Based on the SITC, a detailed construction of all commodities accounting for more than five percent of each country's total value of exports to Canada was compiled. This commodity import documentation was both in value and volume terms (see Appendix C).

Market Performance

The export performance of the SLDC's to Canada was measured in current dollar values. The examination of export performance involved the compilation of the total value of exports on an annual basis for each of the SLDC's, for all developing countries as a group, for the SLDC's as a group, and for the developed countries as a group. Using a constant market share technique, with 1960-1962 averaged as the base year, the actual value of the imports was compared against the calculated value. This technique was also used to determine the leading growth sectors within the five aggregated commodity categories for the various country groupings previously mentioned.

The constant market share technique was also used to determine the trend in Canada's import-mix. This involved calculating a performance index for each of the commodity categories, based on the value of imports from all countries.

Reasons for Selecting a Time-Series Approach

It is apparent that a time-series approach is necessary for evaluating the market performance aspect of the export history of the selected developing countries. However, it is not so readily apparent whether a time-series or a cross-sectional approach is the more appropriate tool for examining the factors affecting the growth of export earnings. In a time-series it is assumed that time periods are alike in all relevant aspects except for those that are incorporated into the analysis. In cross-sectional analysis, on the other hand, it is assumed that each country is alike in all relevant aspects except for those incorporated into the analysis.[4]

A time-series approach was adopted as more appropriate for this study because it is likely that there is less variation within countries over time than among countries at a specific point in time. Minimization of intra-country variation is important because of the multiplicity of characteristics which affect export growth, but which cannot be included in the quantitative analysis in any systematic fashion.

Some Problems with an Elasticities Approach

One common approach to examining the factors influencing growth in the export proceeds of a country involves the estimation of income and price elasticities of demand for the various commodities exported.[5] These calculations are used to explain the growth of export proceeds in terms of income and price elasticities of demand and the trend and

magnitude of changes in world income and prices. This approach is shunned in this study because of the following serious limitations. First, the ability of a researcher to meaningfully quantify an income elasticity of demand for the complete export package of any country is at least questionable. It is difficult, if not impossible, to properly incorporate into the calculation the myriad of factors influencing domestic supply conditions and international demand. Any calculation which excludes such factors will likely have a biased result or, at least, meaningful interpretation of the results will be difficult. Second, the validity of price elasticity estimates is based upon a number of demand and supply assumptions. If these assumptions do not reflect reality, the estimates necessarily will be biased. Finally, if the price elasticities approach is used, no real information about supply conditions in the developing country is incorporated into the estimate. Instead, assumptions about supply are made as a means of generating information about demand. However, MacBean[6] has shown empirically that these supply factors are the very factors that affect conditions of domestic supply, which are predominant in export growth.

Objective 2:
Analysis of Factors Influencing Export Performance

The second major objective of this study was to quantify and examine certain factors influencing the differential export performances of the 25 selected developing countries. The factors examined were the instability of export earnings, the degree of commodity concentration and the nature of this concentration, and the state of the Canadian economy.

MacBean's index of instability[7] in the value of exports was used to calculate the relative variation in the export sales of DC's, LDC's,

and SLDC's as groups and for the value of imports from all countries. The instability was measured for each of the commodity categories, as well as for total earnings of each group. An index of instability in total sales was also calculated for each of the SLDC's. This index of instability is equal to antilog $\sqrt{\text{Vlog}}$, where

$$\text{Vlog} = \Sigma(\log(X_{t+1}/X_t)-m)^2/N,$$

where: X = value of exports in year t,

m = the mean of the differences of the logs of successive X's, and

N = one less than the number of years.

The degree of import concentration was calculated in terms of commodities and commodity categories for each of the SLDC's. The degree of commodity concentration was calculated using the Gini-Hirschman coefficient. This index is defined as

$$\sqrt{\sum_i \left(\frac{X_i}{X_t}\right)^2}$$

where: X_i is the value of imports in the SITC category i, and

X is the value of total imports.

This measure is inversely related to the number of commodities (or products) imported and the evenness of distribution of imports among these commodities.[8] The products included in this calculation were any that accounted for more than five percent of a country's total value of exports to Canada in any year.

The commodity category concentration index was developed by dividing the total value of imports from a country in a year by the value of imports within a specific commodity category for that country. The annual proportions were summed and divided by the number of years to arrive at an average commodity category concentration for the study period.

The commodity concentration index and the instability index were intercorrelated on a country basis to determine if the degree of export concentration was a statistically significant contributing factor in the amount of sales variability. The commodity concentration for each commodity category was also correlated with the instability index to examine the effect of a concentration of exports in any specific commodity category on the stability of export earnings.

Correlation techniques were also used to determine the impact of commodity concentration and the categorization of this commodity concentration by commodity on the export performance of SLDC's. To determine if the type of commodities exported had any effect on the growth rate of export earnings, the degree of concentration was related to the commodity type.

Ordinary least squares regression techniques were used to examine the impact of the state of the Canadian economy on the value of imports from all countries, from SLDC's, and from DC's. This procedure was used for the five aggregate commodity categories to determine whether any of these exhibited aberrant behavior patterns; suggesting a relatively inordinate degree of sensitivity to the state of the Canadian economy.

Secondary Objectives

The impact of the Development Decades on Canadian imports from the developing countries is measured by comparing imports at the beginning to imports at the end of the study period. Imports from all developing countries are compared in commodity-type and value terms, measured both in dollars and in percentages of aggregate Canadian imports. It is hoped that any change in Canadian trade policy affecting greater

liberalization toward developing countries' exports will be apparent in Canada's domestic import pattern.

Footnotes

1. See H. B. Chenery, "Comparative Advantage and Development Policy," American Economic Review, LI (1961), pp. 18-51.

2. The work of Maizels is of the first form, as is that of de Vries. A good deal of the work published by the United Nations and GATT appears to be of the second type and there are numerous case studies. For one example of a case study, see Bruce Wilkinson, Canada's International Trade: An Analysis of Recent Trends and Patterns (Private Planning Association of Canada, 1968).

3. Prior to 1972 these publications were published by the Dominion Bureau of Statistics.

4. In both instances, dummy variables can be employed to handle those factors that are not easily quantifiable.

5. One example of a study utilizing an elasticities approach is H. Houthakker and S. Magee, "Income and Price Elasticities in World Trade," Review of Economics and Statistics, LI (1969), pp. 111-25.

6. See MacBean, op. cit., pp. 47-58.

7. See Coppock, op. cit., p. 24 for a detailed explanation of the index.

8. This procedure is outlined in Gerald Helleiner, International Trade and Economic Development (London: Penguin Books, 1972), p. 90.

CHAPTER IV

ANALYSIS OF CANADIAN IMPORT TRENDS AND FACTORS AFFECTING DIFFERENTIAL SALES PATTERNS AMONG DEVELOPING COUNTRIES

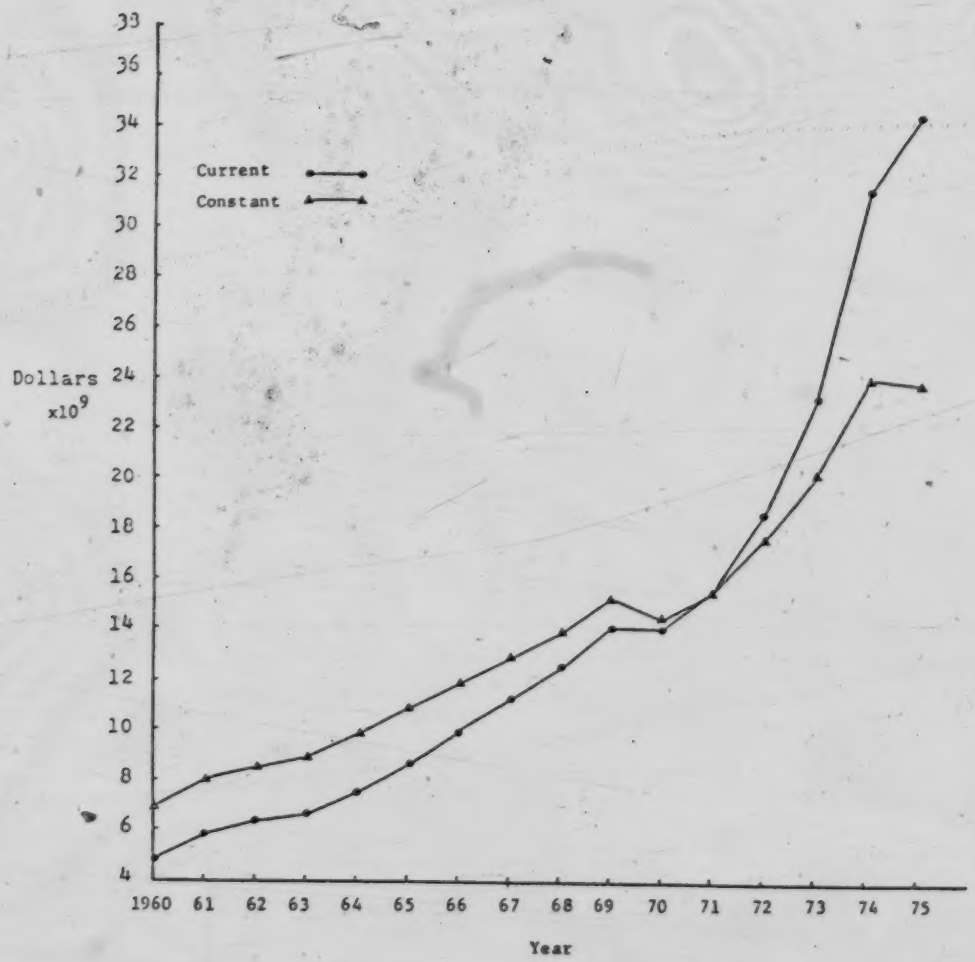
This chapter presents the results of the compilation of Canadian imports during the study period and the empirical analysis of certain factors within these import patterns. These factors were hypothesized as the source of differential growth rates in the value of export sales to Canada among the 25 selected developing countries. The chapter begins with a graphical summation of the trends in domestic imports and proceeds through the three objectives as outlined in Chapter 3: (1) a quantification of market performance, (2) an analysis of certain factors affecting differential export sales or market performance, and (3) a graphical examination of import trends to explore the ability of the developing countries to increase their share of Canada'a import market over the study period.

Aggregate Canadian Import Trends

The total annual value of Canadian imports measured in current and constant (1971) dollars is shown in Figure 1. In current dollar terms, imports have grown from 4.8 billion in 1960 to 34.6 billion in 1975, representing an increase of just over 800 percent. The only year in which imports did not increase in current dollar value was 1970.

Inflation in the Canadian dollar is evident upon examining the value of these same imports measured in 1971 constant dollars. Adjusting for inflation, the value of imports increased by 350 percent, from

Figure 1: Value of Total Canadian Imports, Current and Constant (1971) Dollars.



6.8 billion in 1960 to 23.9 billion in 1975. Import value in constant dollars declined in both 1970 and 1975.[1]

It is apparent that the value of Canadian imports, either in current or constant dollar terms, has increased substantially over the study period. Figure 2 compares the shares of SLDC's and the DC's in the total Canadian market.[2] With the exception of the years 1974 and 1975, the growth in the value of imports from the DC's has outstripped the growth in imports from SLDC's. An exception is the pronounced increase in the cost of crude petroleum imports from the OPEC countries.[3] Over the study period, imports from DC's accounted for 24.8 billion dollars of the 29.8 billion dollar increase in Canadian imports. Thus, the DC's have captured over 83 percent of increased export sales to Canada. Without the oil price increases, this share would have been even greater.

Figure 2 also shows the decline in total imports in 1970 is reflected in the decrease in value of imports from DC's, but SLDC's experienced no decline in sales to Canada. The question of earnings instability is discussed later in this chapter.

During the study period, imports from all LDC's averaged 10.6 percent of the total value of Canadian imports. Figure 3 shows that during the first five years of the study, the LDC share was generally 12 percent, but later declined to 8-9 percent, until the impact of the oil price increases in 1974 and 1975 raised it to 14 percent. The figure reveals that the SLDC's represented 82.5 percent of the total export sales to Canada from all developing countries, and followed a similar pattern of growth and decline in national share, justifing the use of SLDC's as a proxy for all LDC's in the following analysis.

The commodity composition of Canadian imports has altered over the study period. Table 9 summarizes an attempt to quantify the change

Figure 2: Annual Value of Total Imports from DC's and SLDC's.

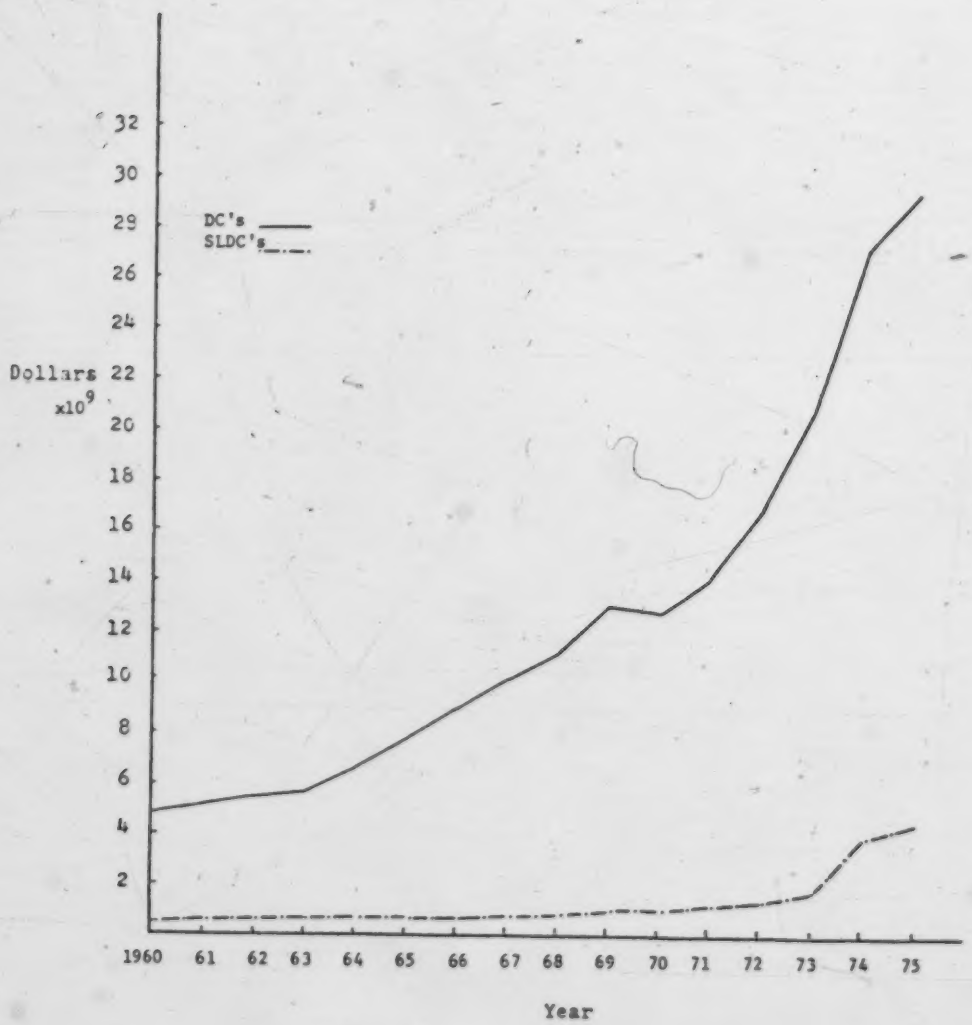
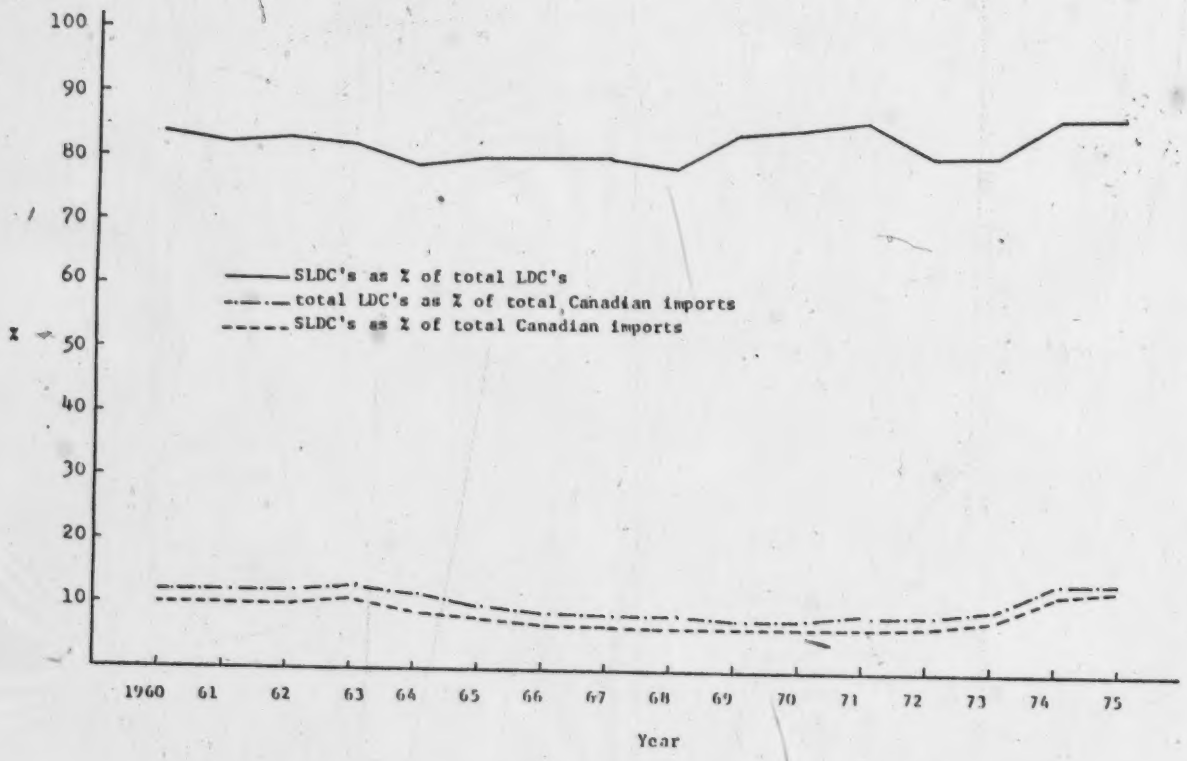


Figure 3: Annual Proportion of Total Canadian Imports from the DC's, LDC's and SLDC's.



in import-mix. Only one of the five Standard International Trade Classification commodity categories consistently increased its share of the total value of Canadian imports. The proportion of manufactures imports has continually exceeded its 1960-62 share, but the first three categories all experienced large declines. In relative dollar terms, Canadian expenditures have increased for imports of manufactures at the expense of expenditures for food, raw materials, and fabricated materials imports.

Table 9: Trend Index[1] in Commodity Composition of Total Canadian Imports.

SITC #1	SITC #2	SITC #3	SITC #4	SITC #5
-29.6	-36.5	-40.6	+108.2	-1.4

1. This index is developed using the total value of Canadian imports. The commodity category total is divided into the total on an annual basis and 1960-62 are averaged. This average is assumed to represent the constant market share for the particular category. This constant market share is subtracted from the actual market share and the differences summed to arrive at the index.

The variation or instability in export sales for the various commodity categories, as well as total value, was calculated for the DC's, LDC's, SLDC's and for total Canadian imports. It is apparent from the results outlined in Table 10 that LDC's and SLDC's had a higher degree of earnings instability in each commodity category and in total value than DC's. LDC's had their greatest degree of instability in the manufactures commodity category and their lowest instability in food, beverage, and tobacco exports to Canada. The instability in international prices for various raw materials is consistent with the fact that the raw materials commodity category displayed the highest instability for DC's and SLDC's, and one of the highest for LDC's. The raw materials commodity

category was also the most volatile in terms of total imports. The manufactures commodity category had the lowest amount of earnings variability, which suggests that growth in Canada's manufactures imports has been consistent.

Table 10: Value Instability[1] of Canada's Domestic Imports.

	Total Imports	DC's	LDC's	SLDC's
Total Value	1.0758	1.0695	1.1831	1.1993
SITC #1	1.0999	1.1012	1.1287	1.1492
SITC #2	1.1871	1.1167	1.2641	1.2767
SITC #3	1.1154	1.1132	1.1831	1.2365
SITC #4	1.0753	1.0749	1.2789	1.1421
SITC #5	1.2046	1.2113	1.2441	1.2625

1. $II = \text{antilog}\sqrt{Vlog}$ $\qquad Vlog = \Sigma(\log (X_{t+1}/X_t) - m)^2 / N$

where: X = value of imports in year t
m = mean of successive differences of log X's
N = number of years minus one.

Market Performance

Changes in the Canadian import-mix have accompanied differential growth in export sales within the five commodity categories by DC's and LDC's. The market performance by commodity category and for the total value of export sales is shown in Table 11 for DC's, LDC's and SLDC's. DC's have increased their share of the total value of domestic imports relative to LDC's. Whereas LDC's have not maintained the share of total Canadian imports they had over the first three years of the study, LDC's have increased their share in all the commodity categories except SITC #1. This apparent discrepancy between the general increase in the share of

commodity categories and the decrease in the share of total imports can be explained in part by the large decline in the LDC share of SITC #1. Further, the dollar magnitude of any increase in the LDC share was outstripped by the dollar increase in DC exports.

Table 11: Index of Market Performance[1] by Commodity Category for DC's, LDC's, and SLDC's.

	SITC #1	SITC #2	SITC #3	SITC #4	SITC #5	Total Value
DC's	+51.8	-10.8	-12.2	-11.0	-8.4	+22.0
LDC's	-51.8	+10.8	+12.2	+11.0	+8.4	-22.0
SLDC's	-30.0	+18.2	+ 6.0	+ 6.0	+7.4	-20.0

1. This index is developed using the same procedure employed for Table 9 except that the constant market share is arrived at by dividing the particular column total for the given country group into the total for all countries in that column.

The major change in the source of imports within a commodity category was the growth in the DC share of domestic food, beverage, and tobacco imports. LDC's have made substantial increases in their shares in the remaining categories. LDC's increase in the manufactures category is of particular importance, for it displayed dynamic growth in relation to the total value of imports (see Table 9).

The constant market share technique was used to calculate a market performance index for each of the SLDC's. The results shown in Column 3 of Table 12 were developed using the total value of exports from the particular country and the total value of LDC exports to Canada in the same year.[4] The LDC share of the Canadian imports was 12 percent throughout the study and the SLDC's maintained approximately 82 percent of this annually, thus, the differential performance indexes among the

Table 12: Market Performance, Gini-Hirschman Concentration and Earnings Instability Indexes.

Country No.	Name	Market Performance	Gini-Hirschman Concentration	Earnings Instability
(1)	(2)	(3)	(4)	(5)
1	United Arab Emirates	.065	.999	35.637 (134.354)
2	Iran	.188	.075	1.575
3	Iraq	.105	.883	3.058 (3.361)
4	Kuwait	-.244	.979	9.140 (10.180)
5	Saudi Arabia	-.184	.998	1.814
6	Yemen (P.D.R.)	.075	.974	6.553 (6.832)
7	Nigeria	.247	.710	1.583
8	Angola	.122	.837	4.567
9	Mauritius	.055	.987	1.713
10	Hong Kong	.295	.125	1.111
11	India	-.277	.434	1.219
12	Malaysia	-.023	.506	1.210
13	China (P.R.)	.152	.210	1.382
14	Taiwan	.411	.334	1.378
15	Brazil	-.056	.538	1.154
16	Chile	.040	.466	1.855
17	Colombia	-.066	.702	1.239
18	Venezuela	-.450	.879	1.280
19	Bahamas	.035	.456	1.996
20	Jamaica	-.362	.773	1.256
21	Cuba	.015	.505	1.996
22	Honduras	.007	.942	1.275
23	Mexico	.042	.273	1.267
24	Netherlands Antilles	-.170	.987	1.397
25	Guyana	-.131	.658	1.238

SLDC's represent a realignment, rather than any absolute increase in LDC's share of the total market. Fifteen countries experienced positive growths in market shares, while 10 experienced declines. The remaining analysis is an attempt to quantify and test the influence of certain factors that might have contributed to the differential market performances.

Analysis of Factors Influencing Export Performance

Instability

An index of instability based on the variation in annual total values of export sales to Canada was calculated for each country. The results, summarized in column 5 of Table 12, show that the Arab oil-exporting countries had the highest degree of earnings instability. To test if this was a result of the OPEC price increases, the index was recalculated for these countries with the years 1973-75 removed. In every case, the index of instability was higher after the removal of these three observations (see the numbers in parentheses following column 5); thus the rising price in crude petroleum exports to Canada had reduced the instability in the total value of domestic imports from these countries.[5]

Import Concentration

The degree of import concentration was calculated in terms of commodities and commodity categories for each of the SLDC's. The commodity concentration index was based on the compilation of each import that amounted to more than 5 percent of any particular country's export package to Canada in any year. The Gini-Hirschman Coefficient was used to calculate indexes of annual export concentrations for each country.

The concentration index shown in column 4 of Table 12 is an average for all years.

The procedure used to calculate the commodity category concentration involved dividing the value of exports in each commodity category into the total value of exports for each country for that year. Again, the figures in Table 13 represent an average determined from the annual figures.

Correlation Analysis

Both parametric and nonparametric correlation techniques were used to test for the existence of a linear relationship between any two of the following four calculated indexes. The four indexes calculated for each country included market performance, export commodity concentration, earnings instability, and commodity category concentration.

The parametric correlation,[6] Pearson's r,[7] was used as an indicator of the goodness of fit of the linear regressions and as a measure of association indicating the strength of the linear relationship between the two variables. R^2 provided a measure of the proportion of variance in the dependent variable associated with the independent variable.

A Student's t with N-2 degrees of freedom was used to test the statistical significance of each coefficient.[8] The reported standard error of the estimate is the standard deviation of the error terms developed in the regression equation. These error terms are the differences between the predicted values of Y_i and the actual values of Y_i.[9]

Nonparametric statistical tests of the relationships among pairs of indexes were used in addition to the parametric tests, because there

Table 13: Commodity Category Concentration for SLDC's Exports To Canada.

Country	SITC #1	SITC #2	SITC #3	SITC #4	SITC #5
1	0	85.7	7.1	0	7.1
2	1.4	97.6	.3	.7	0
3	27.5	72.4	0	0	0
4	0	91.9	1.8	0	6.2
5	0	98.9	0	0	.1
6	57.3	18.8	22.4	1.0	.5
7	30.2	59.1	10.3	0	.4
8	66.5	29.2	2.4	0	1.9
9	99.9	0	0	0	.1
10	5.6	1.4	8.9	81.4	2.7
11	34.2	3.1	49.0	12.8	.5
12	7.7	42.5	41.2	8.3	.2
13	23.5	14.1	16.8	44.3	1.1
14	7.9	.1	31.8	58.9	1.2
15	67.4	15.8	10.6	6.1	.1
16	39.7	18.3	37.6	.6	3.2
17	66.4	14.9	16.4	2.0	.1
18	0	86.9	12.9	0	0
19	34.4	12.0	26.1	19.6	7.8
20	22.1	74.9	.4	1.3	1.1
21	90.4	.5	6.3	2.2	.2
22	98.6	.3	.6	0	.1
23	49.8	29.3	10.5	9.8	.9
24	.1	.1	99.2	0	0
25	25.7	73.3	.1	.1	.6

was reason to doubt that the assumptions underlying the parametric statistic were met.[10] The Spearman Rank Order Correlation[11], rho(r_s), was calculated for each pair and a t-value[12] used to test the level of significance.

Results of the Correlation Analysis. The correlations among the Gini-Hirschman concentration, market performance, and earnings instability are summarized in Tables 14 and 15. There was evidence of an inverse relationship between the commodity concentration of a country's exports and the ability of that country to increase its share of Canada's import market. However, the results are not strong enough to conclude that export diversification is a meaningful objective for LDC wishing to increase its share of Canada's domestic imports. There was moderate evidence (r_s = .5) that greater concentrations among a country's exports to Canada are accompanied by greater earnings instabilities. There was no evidence of any significant relationship between earnings instability and market performance.

Table 14: Correlations among Gini-Hirschman Concentration, Market Performance, and Earnings Instability.

	Pearson's r	Significance	r^2	S.E.
Gini-Hirschman Concentration and Market Performance	-.363	.037	.132	.1894
Gini-Hirschman Concentration and Earnings Instability	.332	.053	.110	67.0304
Earnings Instability and Market Performance	.048	.411	.002	70.9701

Table 15: Rank Order Correlations: Gini-Hirschman Concentration, Market Performance, and Earnings Instability.

	Spearman's r_s	t Value	Significance
Gini-Hirschman Concentration and Market Performance	-.238	1.174	.001
Gini-Hirschman Concentration and Earnings Instability	.502	2.769	.001
Earnings Instability and Market Performance	.213	1.043	.010

The results of the correlation analysis between commodity category concentration and the three indexes -- Gini-Hirschman commodity (or product) concentration, market performance, and earnings instability -- are summarized in Tables 16 and 17. This analysis was done for each of the commodity categories.

An export concentration in the food, feed, beverage, and tobacco commodity category (SITC #1) did not have any statistically significant linear relationship with any of the other three variables. This means that an export-mix concentrated in this category did not tend to be associated with high aggregate commodity concentration, market performance, or earnings instability.

The empirical evidence suggests that a concentration in crude materials (SITC #2) did correlate significantly with aggregate commodity concentration. Such a commodity category concentration was also found to have a negative impact on the market performance of a country and a moderate positive effect on earnings instability.

The analysis for an export-mix concentrated in fabricated materials (SITC #3), although somewhat inconclusive, does reveal an

Table 16: Correlations of Commodity Category Concentration with Gini-Hirschman Concentration, Market Performance, and Earnings Instability.

	Pearson's r	Significance	R^2	S.E.
SITC #1 with:				
Gini-Hirschman Concentration	.001	.50	0	.286
Market Performance	.119	.28	.014	.201
Earnings Instability	-.221	.14	.048	6.929
SITC #2 with:				
Gini-Hirschman Concentration	.505	.005	.255	.247
Market Performance	-.355	.040	.126	.189
Earnings Instability	.327	.050	.107	6.712
SITC #3 with:				
Gini-Hirschman Concentration	-.153	.230	.023	.283
Market Performance	-.091	.330	.008	.202
Earnings Instability	-.131	.270	.017	7.043
SITC #4 with:				
Gini-Hirschman Concentration	-.726	.0002	.527	.197
Market Performance	.535	.003	.286	.171
Earnings Instability	-.156	.23	.024	7.017
SITC #5 with:				
Gini-Hirschman Concentration	-.080	.35	.006	.285
Market Performance	.055	.40	.003	.202
Earnings Instability	.576	.001	.332	5.803

Table 17: Rank Order Correlations[1] of Commodity Category Concentration with Gini-Hirschman Concentration, Market Performance, and Earnings Instability.

	Spearman's r	t Value	Significance
SITC #1 with:			
Gini-Hirschman Concentration	-.229	1.132	.001
Market Performance	.158	.769	.001
Earnings Instability	-.056	.270	insignificant
SITC #2 with:			
Gini-Hirschman Concentration	.414	2.185	.001
Market Performance	-.303	1.526	.001
Earnings Instability	.213	1.047	.001
SITC #3 with:			
Gini-Hirschman Concentration	-.568	3.317	.001
Market Performance	-.033	.162	insignificant
Earnings Instability	-.335	1.708	.001
SITC #4 with:			
Gini-Hirschman Concentration	-.831	7.183	.001
Market Performance	.252	1.248	.001
Earnings Instability	-.460	2.484	.001

1. Calculations are not included for SITC #5 due to the small proportions involved and numerous tied rankings.

inverse relationship between this commodity category and both the aggregate commodity concentration and earnings instability indexes. These results show that a SLDC with an export concentration in fabricated materials tended to have product diversification within this commodity category and that its earnings were more stable relative to countries with concentrations in either SITC #1 or SITC #2.

An export-mix with a manufactures commodity category (SITC #4) concentration was found to have a strong negative (-.73 and -.83) relationship to aggregate commodity concentration, a positive (.54 and .25) relationship to market performance, and a negative relationship to earnings instability. These results indicate that a concentration in SITC #4 tended to coincide with a diversification of products exported within the manufactures category. It is interesting to note that both of the commodity category concentrations that were correlated with product diversification (SITC #3 and #4) also had evidence of negative linear relationships between commodity category concentration and earnings instability. Such relationships are consistent with the previous evidence suggesting that export diversification increased stability of earnings.

A concentration in the residual commodity category (SITC #5) was found to be positively correlated with earnings instability. Such a relationship seems consistent with the role of a residual category, but the small value of the entries in this category and the lack of a non-parametric calculation limit the usefulness of these particular results.

Regression Analysis

Ordinary least squares linear regression techniques were used to measure the dollar value change in imports from DC's, SLDC's and all

countries for every dollar change in Canada's gross national product (GNP). The dependent variable in each regression was the value of imports within each commodity category or the total value of imports and the independent variable was GNP.

Based on the Durbin-Watson test statistic[13] autocorrelation was present in twelve of the eighteen regressions. The existence of autocorrelation reduces the efficiency of the standard error of the estimated coefficient and therefore the test statistics are less reliable.[14] The problem of autocorrelation was removed using the Cochrane-Orcutt method.[15] This method does not assume an arbitrary value for rho to estimate the parameters of a linear equation with autoregressive disturbances. Instead, it is an iterative procedure using ordinary least squares to calculate a r of sufficient magnitude to remove the autocorrelation.[16] The results of the regressions shown in Table 18 for all countries, Table 19 for DC's, and Table 20 for SLDC's are the results obtained using this method to remove autocorrelation.

Regression Results. The coefficients in the regression analysis tables represent the change in the value of imports resulting from a one-thousand unit (or dollar) increase in Canadian GNP.[17] Thus for a one dollar increase in Canadian GNP, the value of imports from the DC's increased by almost 21 cents whereas the increase in imports from SLDC's was only one and a half cents, and the increase in imports from all countries 22 cents. For each unit increase in GNP, the value of imports from DC's increased fourteen times more than the value of imports from SLDC's.

The most dynamic commodity category for the DC's[18] was manufactures (.143), followed by fabricated materials (.073), food, feed, beverages, and tobacco (.014), and raw materials (.005). It is apparent

Table 18: Regression Analysis Imports as a Function of Canadian GNP.

	SITC #1	SITC #2	SITC #3	SITC #4	SITC #5	Total
Coefficient	16.92	10.68	40.11	145.88	8.19	219.89
S.E.	6.26	6.39	2.23	6.50	4.43	19.44
t value	2.70[2]	1.67	17.98[1]	22.43[1]	1.87	11.31[1]
d.w.	1.19	2.39	2.24	1.58	1.31	1.88
rho	.74	.54	—	.46	.84	.52

1. significant at .005 2. significant at .025

Table 19: Regression Analysis Imports from DC's as a Function of Canadian GNP.

	SITC #1	SITC #2	SITC #3	SITC #4	SITC #5	Total
Coefficient	14.30	4.64	37.34	143.04	1.06	200.67
S.E.	8.20	.82	2.02	2.42	.43	10.89
t value	4.61[1]	5.64[1]	18.46[1]	59.10[1]	2.46[2]	18.42[1]
d.w.	1.62	1.98	2.06	1.51	1.41	1.66
rho	.87	.47	—	—	—	.45

1. significant at .005 2. significant at .025

Table 20: Regression Analysis Imports from SLDC's as a Function of Canadian GNP.

	SITC #1	SITC #2	SITC #3	SITC #4	SITC #5	Total
Coefficient	1.52	6.57	1.86	5.30	.06	15.78
S.E.	.46	5.69	.29	.86	.01	6.80
t value	3.27[1]	1.16	6.44[1]	6.17[1]	9.01[1]	2.32[2]
d.w.	1.86	2.39	2.30	1.81	1.88	2.31
rho	.50	.53	—	.93	—	.52

1. significant at .005 2. significant at .025

that the major increase in Canadian import spending has been in manufactures and that it is predominantly DC's that have increased sales values. With one exception, SLDC's have gained relatively less in terms of increased export sales as the Canadian economy grew. The one exception was in the crude materials, largely as a result of OPEC price increases.

Commodity Category Import Trends

The annual value of imports from DC's and SLDC's in each of the major commodity categories is shown in Figures 4 through 7. Although SLDC's have increased their share of the import market, the absolute values of their export sales have generally remained minor in relation to the DC's. Since 1973, SLDC's have sold more crude materials to Canada than have the DC's, but in all other categories they continually lagged behind the DC's in terms of import sales to Canada.

Summary of Findings

The Canadian import-mix has tended to move toward increased expenditures for manufactures, with relatively less of the total expenditure being allocated to the remaining commodity categories. SLDC's have increased their share in all the commodity categories except the food, feed, beverage, and tobacco category, while DC's increased their share of this category, suggesting a shift in the type of product being imported within this category.

The evidence suggests that the values of SLDC and LDC total and commodity export sales showed a greater degree of instability than DC export sales. It is not possible from this study to conclude whether this was a consequence of supply or demand conditions.

Figure 4: Value of Imports in SITC #1 for DC's and SLDC's.

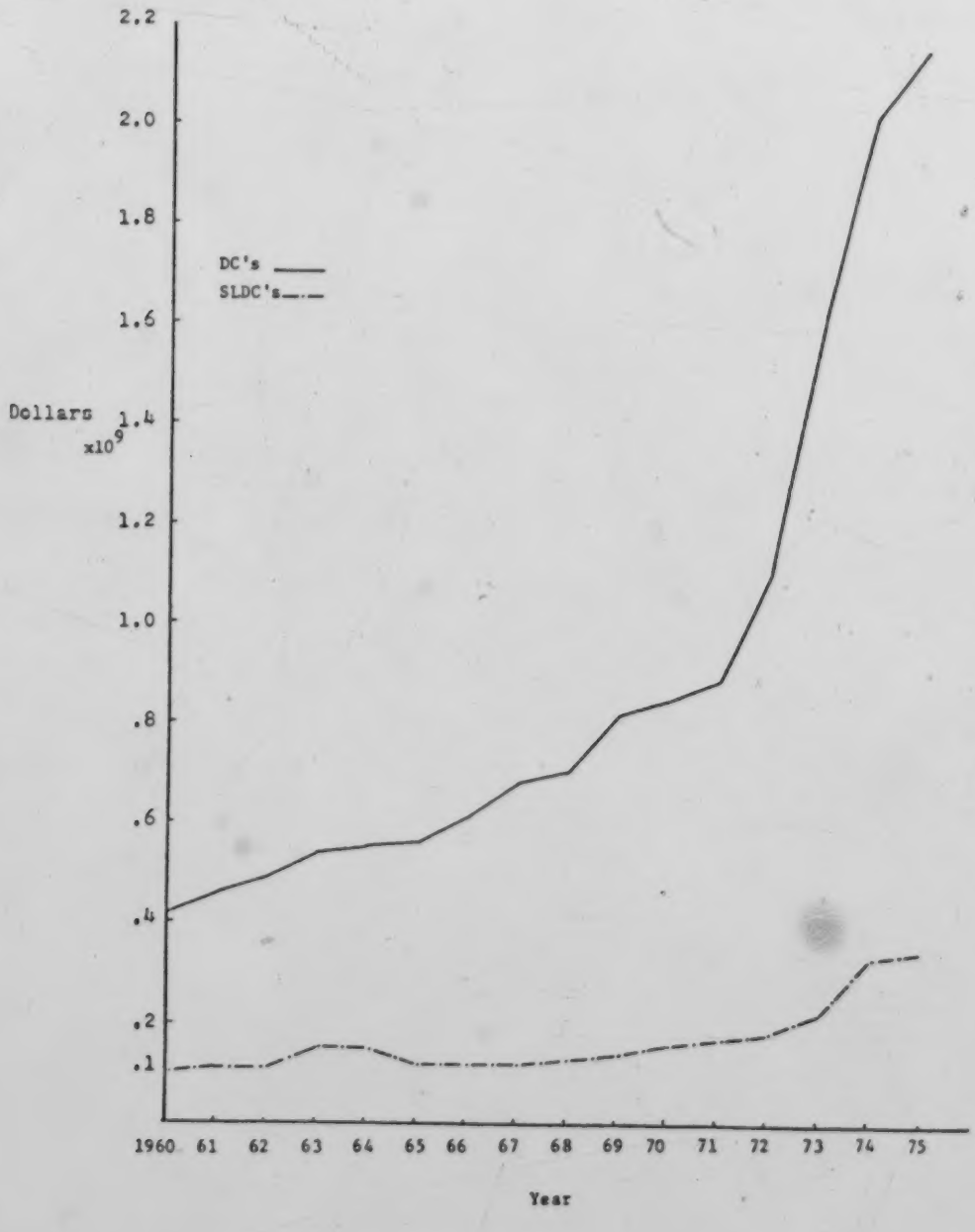


Figure 5: Value of Imports in SITC #2 for DC's and SLDC's.

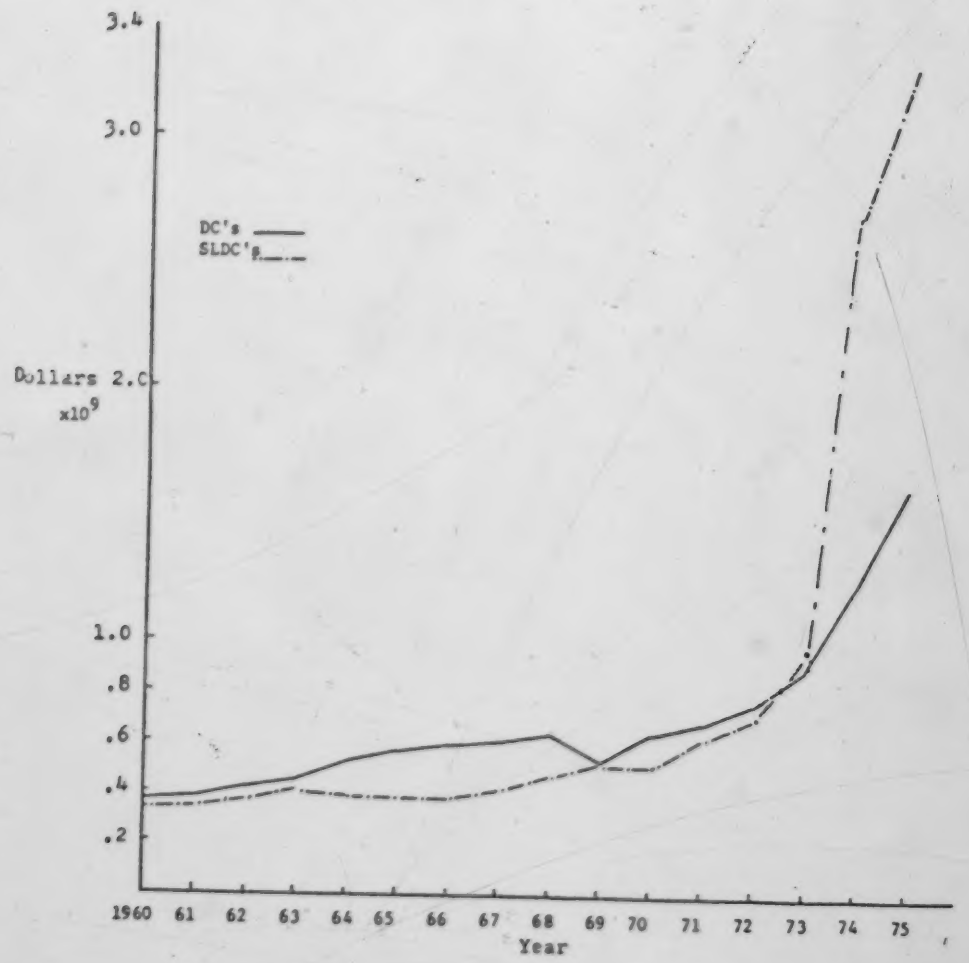


Figure 6: Value of Imports in SITC #3 for DC's and SLDC's.

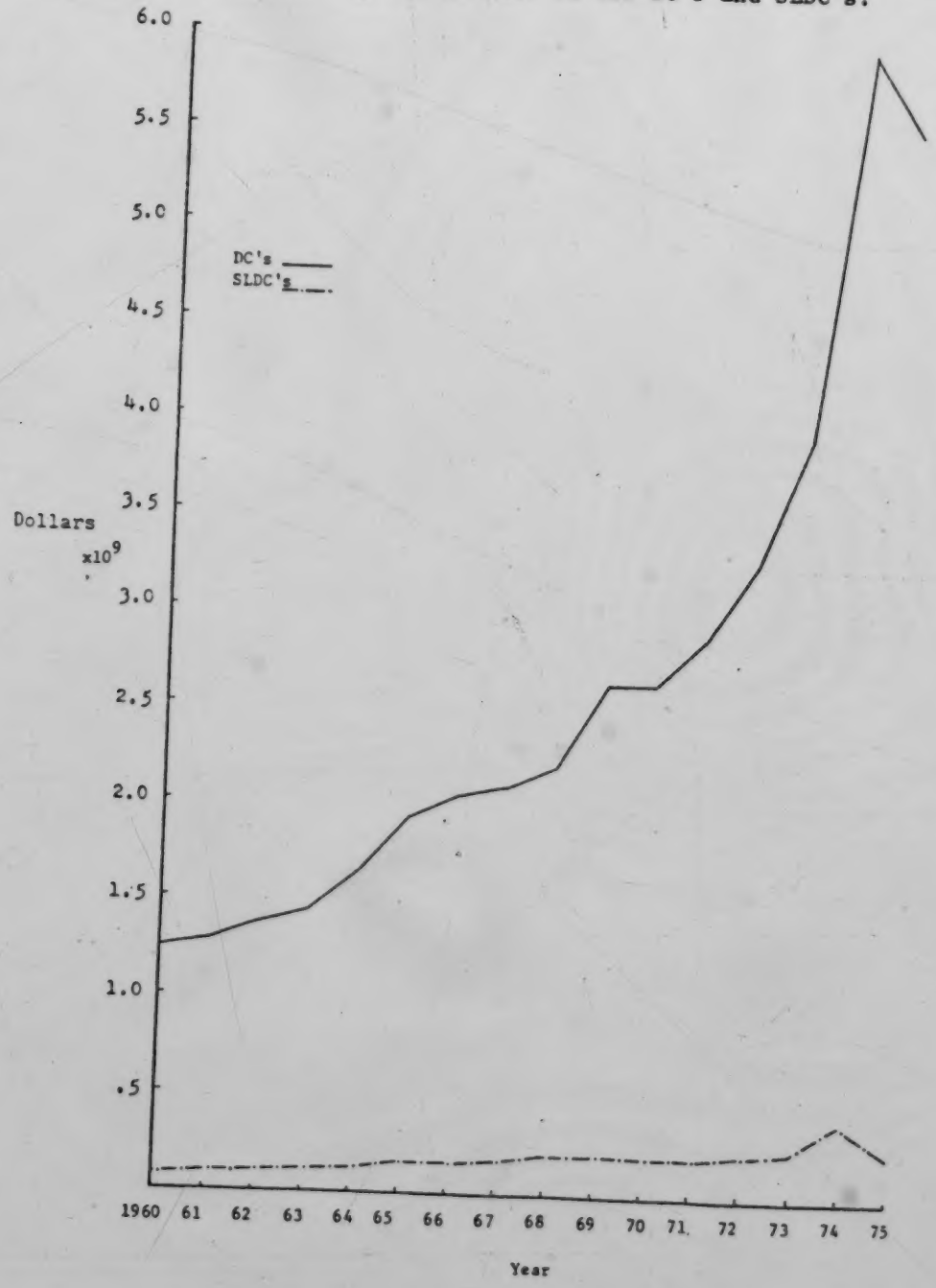
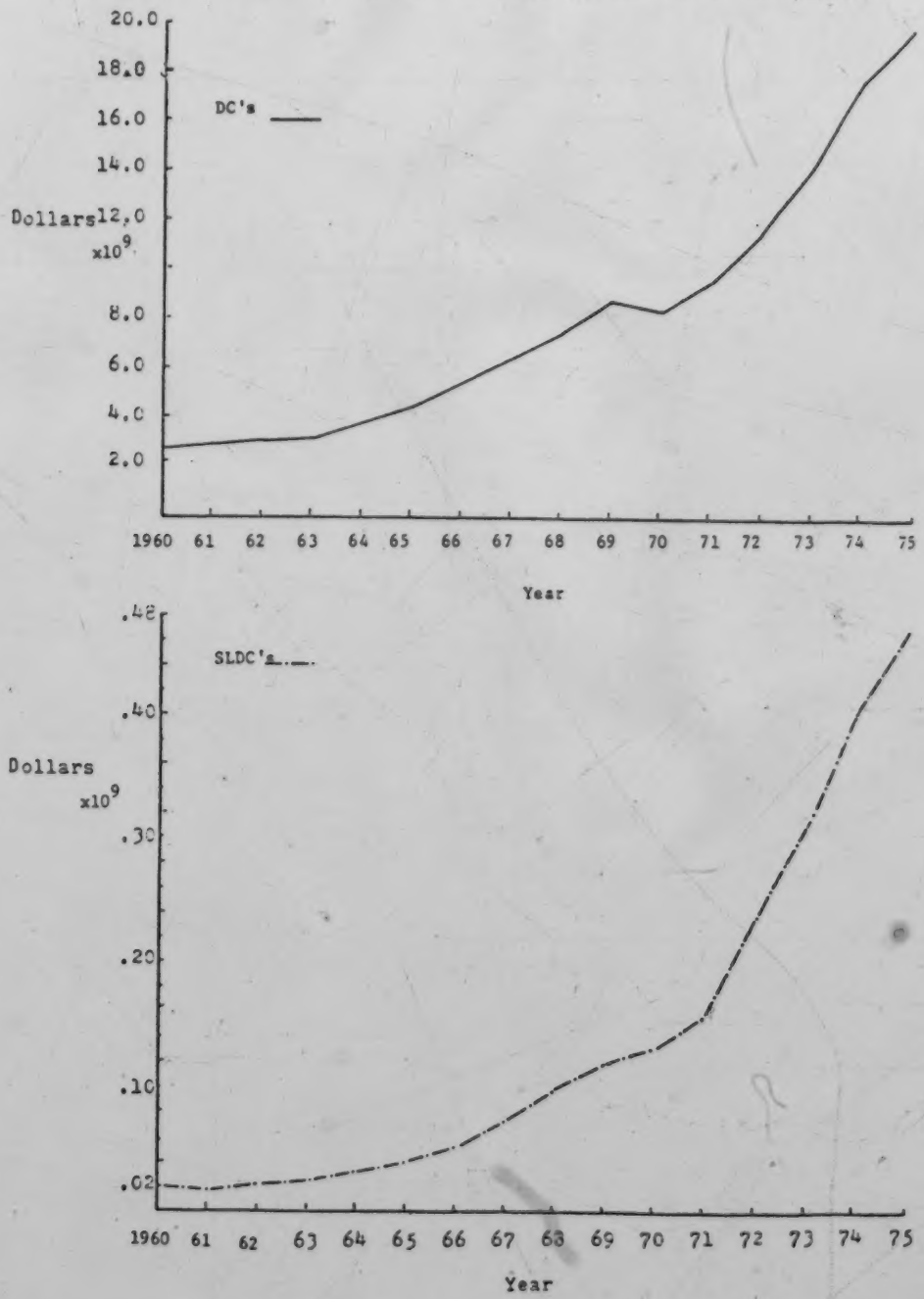


Figure 7: Value of Imports in SITC #4 for DC's and SLDC's.



Correlation analysis suggest that degree of export concentration had a direct impact on degree of earnings instability and that those countries with a manufactures concentration tended to increase their relative market shares. Another interesting conclusion was that a concentration in crude materials (for example, crude petroleum) had a negative impact on market performance.

The regression analysis showed that DC's benefitted far more than SLDC's from growth in Canada's economy. The crude materials coefficient for SLDC's suggests that the dollar values of energy imports have increased substantially relative to the values of other imports from SLDC's.

Footnotes

1. The remainder of the analysis is in current dollar terms.

2. The SLDC's group is the 25 selected developing countries.

3. The effect of the increases in the international price for crude petroleum is graphically illustrated in Figure 5.

4. The total value of LDC's exports to Canada was used instead of the value of all imports, because the values of imports from particular SLDC's were extremely small in relation to total imports. It is unlikely that this choice will introduce any bias into the results, for over the study period the range in the ratio of total imports to LDC's imports was only 5 percent. Thus, it was assumed constant.

5. The same procedure was applied to Angola. Its index was reduced sharply, suggesting that the civil war in 1975 and the increase in oil prices in 1974 did have a positive effect on the instability of earnings of Angola's exports to Canada.

6. For a thorough discussion, see Norman H. Nie et al. Statistical Package for the Social Sciences: Second Edition (Toronto: McGraw-Hill Book Company, 1975), pp. 276-299.

7. The Pearson correlation coefficient is computed in SPSS by the following formula:

$$r = \frac{\Sigma_{i=1}^{N} X_i Y_i - (\Sigma_{i=1}^{N} X_i)(\Sigma_{i=1}^{N} Y_i)/N}{\{[\Sigma_{i=1}^{N} X_i^2 - (\Sigma_{i=1}^{N} X_i)^2/N][\Sigma_{i=1}^{N} Y_i^2 - (\Sigma_{i=1}^{N} Y_i)^2/N]\}^{1/2}}$$

where: X_i = ith observation of variable X
Y_i = ith observation of variable Y
N = number of observations.

8. The level of significance is computed for the quantity $r \left[\frac{N-2}{1-r^2} \right]^{1/2}$.

9. The standard error of the estimate is calculated using the formula

$$S.E. = \left(\frac{\Sigma_{i=1}^{N} Y_i^2 - a\Sigma_{i=1}^{N} Y_i - b\Sigma_{i=1}^{N} X_i Y_i}{N-2} \right)^{1/2}$$

where a is the regression coefficient and b is the intercept.

10. For a discussion of these conditions see Sidney Siegel, Nonparametric Statistics for the Behavioral Sciences (Toronto: McGraw-Hill Book Company, 1956), p. 19.

11. The Spearman Rank Order Correlation is applied in reference to: Siegel, op. cit., pp. 203-213.

12. The t value is computed using the formula $t = r_s \sqrt{N-2/1-r_s^2}$.

13. Autocorrelation was tested as in M. Dutta, Econometric Methods (Cincinnati: South-Western Publishing Co., 1975), pp. 112-114.

14. For a good discussion of the effects of autocorrelation on time series analysis, see Ronald Wonnacott and Thomas Wonnacott, Econometrics (Toronto: John Wiley & Sons, Inc., 1970), pp. 132-140.

15. D. Cochrane and G. H. Orcutt, "The Application of Least Squares Regression to Relationships Containing Autocorrelated Terms," Journal of the American Statistical Association, Vol. 44, No. 245 (September 1949), pp. 32-61.

16. The Cochrane-Orcutt method can be outlined as follows. Ordinary least squares (OLS) is used to estimate $Y_i = \beta_i X_i + u_i$. Based on the residuals calculated in this regression, rho is calculated using OLS to estimate $u_i = \rho u_{i-1} + \xi_i$. This procedure is repeated using OLS on the transformed variables, i.e. $(Y_i - \rho Y_{i-1}) = \beta_i (X_i - \rho X_{i-1}) + u_i$. A new rho can thus be calculated, and the procedure repeated until there is no autocorrelation in the residuals.

17. This is not precisely correct, for the regressions involving Cochrane-Orcutt produce a coefficient based on transformed variables. However, these coefficients so closely approximated the initial coefficients estimated using the basic data that an interpretation based on a one unit increase in GNP is acceptable.

18. Recalling that DC's averaged 82 percent of Canada's total value of imports, it is useful to view these figures as a proxy for all imports. In so doing, it is apparent which sectors have been relatively more dynamic.

CHAPTER V

SUMMARY, POLICY IMPLICATIONS, AND CONCLUDING REMARKS

Summary of the Study and the Empirical Findings

An attempt has been made in this study to perform three tasks. First, the recent export experience of the developing countries has been described and the results of the existing research in the LDC trade area have been summarized. Second, a framework has been constructed for measuring the performances of certain developing countries in their export sales to Canada and for quantifying some particular characteristics underlying the differential export sales performances of these developing countries. Finally, the export performance of the SLDC's has been investigated empirically within this framework.

A time-series approach was used to quantify the market performance of each SLDC. Differential export performances among these SLDC's were analyzed by focusing on three explanatory factors: (1) the commodity-type export concentration, (2) the commodity category concentration, and (3) the instability of export sales. The market performance, the concentration measures, and the degree of earnings instability were also calculated for DC's, LDC's and for all these groups of countries.

Parametric and nonparametric correlation analysis techniques were used to examine the relationships among the market performances of the SLDC's, the degree and nature of export concentration, and earnings instability. Both these correlation techniques test the strength and

the nature of the hypothesized linear relationship between the two tested variables.

Finally, regression analysis, with Canada's GNP as the independent variable, was employed to examine the impact of the Canadian economy on the value of imports within the various commodity categories from SLDC's, DC's and all countries.

In investigating export performance within this framework the following results emerged. Examining the value of total domestic imports, it was apparent that growth in the value of Canadian manufactures imports had outstripped the increase in the value of imports in any of the remaining four commodity categories. The manufactures commodity category also had the lowest measure of earnings instability among the commodity categories for imports from all countries, suggesting that the transition towards a concentration in manufactures imports, although major in relative terms, has proceeded at a constant rate.

Over the study period, the SLDC's have managed to increase their share of domestic imports relative to the DC's in each commodity category except food, feed, beverage, and tobacco. This suggests that the import-mix within the food, feed, beverage, and tobacco category has shifted, at least in value terms, towards those products exported by the DC's. The setback in this category was more than offset by the increases in the remaining categories. Of particular interest was the increased share in the manufactures category.

The generally accepted claim that export sales from developing countries tend to display a greater degree of instability than those from developed countries was consistent with findings on the relative instability of export sales to Canada. In total value terms for each of the individual commodity categories, the developing countries had a

higher degree of export earnings instability than did the developed countries. Among the particular commodity categories, the developing countries had the highest degree of instability in the manufactures category. This instability, coupled with dynamic growth in the relative total share of the market and the positive market share performance of LDC's, suggests that manufactures imports from LDC's are subject to an inordinate degree of Canadian government intervention. Examination of the nature of domestic manufactures imports originating in the LDC's (see Appendix C) reveals a concentration in textiles, textile products, and footwear. All of these imports are subject to numerous and oft-changing "voluntary" import-quota schemes established by the Canadian government. The evidence suggests that Canadian policy may contribute to the earnings instability of those LDC's with a manufactures export concentration.

Empirical evidence from correlation analysis does support the hypothesis of a positive linear relationship between commodity concentration and earnings instability. There was also evidence of a weak inverse relationship between commodity concentration and market performance. However, there was no evidence of any significant relationship between earnings instability and market performance.

Export concentration in the food, feed, beverage, and tobacco commodity category was not significantly related to export performance or earnings stability. In addition, countries with a concentration in SITC #1 tended not to have high aggregate commodity concentrations. Export concentration in crude materials was related to high aggregate commodity concentration, negatively related to market performance, and had a moderate positive effect on earnings instability. The evidence suggests that an export-mix with a concentration in fabricated materials

was inversely related to both aggregate commodity concentration and earnings instability. The analysis also revealed export concentration in manufactures is positively related to market performance and earnings instability, and inversely related to aggregate commodity concentration, suggesting that concentrations in the manufactures commodity category were characterized by product diversity. Both commodity category concentrations that were consistent with export diversification -- the fabricated materials and the manufactures categories -- had strong inverse relationships with earnings instability, supporting earlier evidence that export diversification contributed to the earnings stability of exports to Canada.

The results of the regression analysis suggested that growth in the Canadian economy had a greater effect on the value of imports from the DC's than the SLDC's.

Policy Implications

A study of this type does not lend itself to objective development of policy implications, for it is not possible to divorce from policy consideration the analyst's view of decision-making process in LDC's and the mechanism through which policy decisions are implemented. The mechanism through which the need for action is perceived and decisions made and implemented is very complex and varies over time and space. As such there are likely to be instances where a fundamental change in the existing LDC decision-making mechanisms is prerequisite to effective implementation of any policy suggestions of this study.

The state cannot precisely manipulate all economic variables due to the presence of private ownership and control over factors of production and factor incomes. In dealing with the foreign sector, LDC's tend

to be extremely vulnerable to factors operating on international commodity markets beyond the influence of any LDC. Such limitations on the potential efficacy of a developing country's policy implementation suggest every problem does not necessarily have an appropriate corresponding policy, except in the sense that there can be no neutral action (or inaction) in an economic system. In regard to Canada's trade policy toward the LDC's, it is likely that motives other than purely economic ones (for example, humanitarian, international good-will, or national guilt) must be examined.

A final caveat should be noted. This study assumes that an increase in the value of exports (or improving market performance) is beneficial from the perspective of a developing country. There is a fundamental difference, however, between improving market performance and goals such as "maximizing utility" or "risk adjusted rates of return." In order to quantify and allocate the gains from trade, it is necessary to know the efficiency prices of those commodities traded internationally. It is possible to generate efficiency prices for specific commodities that are traded through a futures market, but not for many other commodities (most manufactures, for example). As a consequence of the absence of quantifiable efficiency prices, the question of allocating the gains from trade is indeterminate.

Although it is not possible to determine empirically which country is gaining more from Canadian imports from developing countries, the market performance measure is not without justification. The justification is based on the tendency of international exporters to sell at the highest price and the likelihood that there is no obligation to sell. It is unlikely that a country would export a commodity to Canada that it could sell for a higher price to another country.

The policy implications that emerge from this study are few in number, being limited by the variables included in the analysis. First, it does not necessarily follow that most developing countries which tended to have exports concentrated in relatively stagnant commodity categories should move into the more dynamic manufactures commodity category. In the absence of detailed information about LDC supply capabilities, Canadian demand, and some theory of the basis of international specialization, such a conclusion is, at best, problematical. A second conclusion, emerging from the first, regards the importance of the ability to reallocate resources in response to changing Canadian (and international) demand. Thus, attention should be given to policies designed to foster resource flexibility.

There were some problems in interpreting the effects of export concentration, but the evidence does suggest that product diversification contributed positively to market performance and earnings stability. The conclusion that export diversification is a meaningful policy alternative for developing countries requires some qualification. A gradual diversification is likely to be more successful than a rapid one because time is likely needed to effect an efficient change in prevailing resource use patterns. This export diversification must necessarily consider potential international demand and supply, domestic supply potential, efficiency of production from an opportunity cost perspective, and the implementation of such a policy in perspective with overall domestic development policy.

Another policy implication from this study concerns the positive association between growth of Canada's manufactures imports and export growth. The evidence does suggest that efforts to identify manufactured products that a particular developing country can produce relatively

efficiently (i.e., has a comparative advantage in producing) and for which there exists a sufficient demand are worthwhile. In addition, it suggests that Canada might give consideration to tariff preferences for manufactured goods originating in developing countries. The review of Canadian trade policy in relation to manufactures is particularly important due to the inordinately high degree of instability associated with LDC's manufactures exports. Consideration is required of a tariff system in which the effective rate of protection does not rise with the stage of processing and which does not discriminate against LDC policies designed to increase the value-added component of their exports.

Recommendations

The following recommendations arise partly from the author's perceptions of the shortcomings of this study and partly from the results. First of all, it would be desirable to quantify market performance in terms of specific products, not only overall sales values. It is apparent that an imported product must compete not only with other products, but also with similar and the same product originating in different countries. Second, because manufactures imports are increasingly dominating Canadian imports and international trade flows, a detailed investigation of the process of industrialization in a number of individual countries might be useful in understanding the relationship between industrialization and export performance. Third, the impact of preferential trading arrangements such as the Commonwealth Preferred Tariff should be analyzed to examine the potential contribution of trading blocs to the economic growth of developing countries. Finally, it would likely be illuminating to employ other analytical techniques on the same data base, updating where possible.

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APPENDIX A

AN EXPLANATION OF THE SITC CODE

The Standard International Trade Classification aggregations used throughout the study contained the following commodity numbers:

SITC #1 00110-18399

SITC #2 20110-29199

SITC #3 30110-49704

SITC #4 50119-96199

SITC #5 97010-97090.

These commodity aggregations were described as follows:

SITC #1 food, feed, beverage and tobacco

SITC #2 crude materials

SITC #3 fabricated materials

SITC #4 manufactures

SITC #5 residual or special transactions

APPENDIX B

ANNUAL VALUE OF CANADIAN IMPORTS

This appendix lists the current dollar value of Canadian imports from various sources under the five commodity categories used in the study. The numbers shown represent thousands of dollars. The origin of the imports is indicated by the row number 1-29 which mean the following:

1. United Arab Emirates
2. Iran
3. Iraq
4. Kuwait
5. Saudi Arabia
6. Yemen (P.D.R.)
7. Nigeria
8. Angola
9. Mauritius
10. Hong Kong
11. India
12. Malaysia
13. China (P.R.)
14. Taiwan
15. Brazil
16. Chile
17. Colombia
18. Venezuela
19. Bahamas
20. Jamaica
21. Cuba
22. Honduras
23. Mexico
24. Netherlands Antilles
25. Guyana
26. totals of SLDC's
27. totals of LDC's
28. totals of DC's
29. totals of all countries

1975

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	140589	0	0	0	140589
2	1306	756095	0	540	135	758076
3	1136	132819	0	1	0	133956
4	0	110505	0	1	16	110522
5	0	745904	0	0	57	745961
6	0	196577	2	1	75	196655
7	952	76820	101	22	476	78371
8	356	14	0	0	108	478
9	62997	0	0	59	0	63056
10	8250	1071	10654	149023	1932	170930
11	14785	565	13782	17347	171	46650
12	3990	29788	37948	30682	961	103369
13	9352	3547	10965	32355	109	56328
14	12122	222	27617	140944	998	181903
15	54509	25384	32044	57675	605	170217
16	3662	8152	6705	524	48	19091
17	22539	708	6674	2280	38	32239
18	695	1059469	44869	1300	419	1106752
19	1020	10597	9066	2720	478	23881
20	6886	10281	82	470	360	18079
21	81037	71	68	263	16	81455
22	11699	11	25	8	12	11755
23	36912	15136	8572	34289	453	95362
24	142	226	24060	5	25	24458
25	1992	9393	5	243	49	11682
26	336339	3333944	233239	470752	7541	4381815
27	522282	3465818	361991	646827	13843	5010761
28	2159645	1621257	5582262	19950720	310868	29624752
29	2681927	5087075	5944253	20597547	324711	34635513

1974

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	86387	0	0	0	86387
2	983	616494	2	492	32	618003
3	762	35727	0	147	35	36671
4	0	64720	0	0	8	64728
5	0	318838	0	1	68	318907
6	34	104228	0	0	0	104262
7	4508	48650	310	4	282	53754
8	846	93584	0	0	53	94483
9	76613	0	0	92	9	76714
10	6459	682	9268	116243	2166	134818
11	18269	1114	24954	14797	138	59272
12	4032	38627	38741	32341	446	114187
13	10162	3315	16347	31366	159	61349
14	8418	301	42166	141893	980	193758
15	34597	14412	36258	26667	289	112223
16	3061	34618	16056	837	17	54589
17	18037	6134	12877	2010	20	39078
18	1431	1190936	97667	385	635	1291054
19	1930	118	16568	1922	365	20903
20	9649	12871	881	416	742	24559
21	75921	4	11	371	9	76316
22	14866	69	249	23	121	15328
23	40042	14420	25378	33867	559	114266
24	129	299	66924	42	20	67414
25	1574	12224	189	24	181	14192
26	332323	2698772	404846	403940	7334	3847215
27	493210	2836240	526540	556351	13035	4425376
28	2022983	1236438	5955087	17775900	276336	27266744
29	2516193	4072678	6481627	18332251	289371	31692120

1973

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	50254	0	0	0	50254
2	1252	129833	1	573	17	131676
3	586	19957	0	0	7	20550
4	0	3684	0	1	10	3695
5	0	60168	0	7	205	60380
6	45	23774	0	0	46	23865
7	11115	68856	1972	6	210	82159
8	3404	50181	0	0	0	53585
9	29368	0	0	19	0	29387
10	5209	615	6444	95624	2047	109939
11	12875	382	16521	8432	257	38467
12	2844	33810	31911	25398	1146	95109
13	7851	2665	12216	29728	445	52905
14	7113	181	35288	120230	951	163763
15	38624	13404	21818	12998	229	87073
16	1853	30441	3255	104	21	35674
17	15368	8259	8106	882	24	32639
18	1458	475509	42244	680	597	520488
19	2916	154	6469	1246	118	10903
20	4075	16356	48	500	1060	22039
21	16376	31	34	163	7	16611
22	16075	55	339	5	46	16520
23	39085	14709	12373	16185	930	83282
24	0	204	46942	26	5	47177
25	1894	12446	9	12	28	14389
26	219386	1015928	245990	312819	8406	1802529
27	346643	1112440	330529	418129	12480	2220221
28	1634842	903813	3951036	14379314	234267	21103272
29	1981485	2016253	4281565	14797443	246747	23323493

1972

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	27063	0	0	1	27064
2	640	69405	0	638	198	70881
3	218	12638	0	1	0	12857
4	0	1950	637	3	3	2593
5	0	54633	0	0	3	54636
6	67	0	536	0	0	603
7	5343	54216	1021	11	189	60780
8	9796	35348	0	0	0	45144
9	18125	0	0	3	0	18128
10	3951	706	6619	91215	2478	104969
11	16081	283	21786	5346	909	44405
12	3425	18260	27776	7706	238	57405
13	6429	3509	13918	24284	237	48377
14	8616	264	26635	89917	754	126186
15	36984	6023	13341	5334	184	61866
16	1540	3317	1575	65	14	6511
17	8200	13106	8014	1058	40	30418
18	1340	359737	49391	82	358	410908
19	1878	144	11222	3081	338	16663
20	2900	15921	35	329	465	19650
21	10823	13	0	180	60	11076
22	18679	297	410	3	29	19418
23	26777	10740	6575	8399	461	52952
24	0	243	34263	13	6	34525
25	1250	14543	23	11	116	15943
26	183062	702359	223777	237679	7081	1353958
27	286529	784174	292448	291844	9824	1664819
28	1113962	755610	3286543	11655836	192657	17004608
29	1400491	1539784	3578991	11947680	202481	18669427

1971

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	4879	0	0	0	4879
2	595	65223	421	273	130	66642
3	483	16634	0	0	1	17118
4	0	0	0	0	17	17
5	0	27214	0	0	2	27216
6	16	0	1413	0	0	1429
7	6365	48074	2630	22	153	57244
8	9556	14871	0	51	0	24478
9	11495	0	0	0	7	11502
10	3587	831	5261	68412	2086	80177
11	20386	418	19423	4077	305	44609
12	4304	16699	20186	3946	188	45323
13	4722	961	3930	13573	116	23302
14	5076	152	19181	55756	541	80706
15	35366	5483	6926	2804	120	50699
16	1915	724	6586	29	75	9329
17	9062	16673	5613	489	276	32113
18	528	340339	46626	23	148	387664
19	1267	17	16293	2691	677	20945
20	2528	25378	56	238	352	28552
21	10231	0	16	100	17	10364
22	17490	38	78	5	20	17631
23	26753	12454	5318	5212	424	50161
24	0	951	40825	4	19	41799
25	1731	23255	16	11	109	25122
26	173456	621268	200798	157716	5783	1159021
27	262159	642637	247815	185739	10114	1348464
28	894692	679088	2892349	9639639	157040	14262808
29	1156851	1321725	3140164	9825378	167154	15611272

1970

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	7155	0	0	7	7162
2	903	32705	1	261	10	33880
3	65	14342	0	0	1	14408
4	0	7040	0	0	0	7040
5	0	24050	0	3	22	24075
6	28	0	0	0	0	28
7	4885	34832	4796	7	37	44557
8	9634	0	0	0	0	9634
9	14831	0	0	0	0	14831
10	3684	930	4486	67358	2028	78486
11	14205	1415	19136	4968	372	40096
12	4388	21660	24949	3251	142	54390
13	3612	1043	2187	12067	118	19027
14	3457	95	12476	35503	405	51936
15	36620	6948	4520	1174	50	49312
16	1545	17	819	57	319	2757
17	7189	14289	4570	482	59	26589
18	779	280864	57375	6	189	339213
19	1246	1	3259	1743	209	6458
20	1963	24543	38	214	310	27068
21	9368	0	10	92	41	9511
22	12927	0	184	2	14	13127
23	27794	11608	3419	4094	429	47344
24	0	376	53793	4	5	54178
25	3031	25496	47	18	177	28769
26	162154	509409	196065	131304	4944	1003876
27	261245	527418	236449	152855	7250	1185217
28	854310	644429	2648974	8464873	154099	12766685
29	1115555	1171847	2885423	8617728	161349	13951902

1969

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	14914	0	0	8	14922
2	699	28682	259	523	13	30176
3	1029	7802	0	0	7	8838
4	0	6068	0	0	4	6072
5	0	26750	0	0	1	26751
6	37	0	367	0	0	404
7	681	15943	5558	3	17	22202
8	6138	0	0	0	37	6175
9	14129	0	0	0	0	14129
10	2882	1121	4533	62788	1676	73000
11	8415	2238	24552	5522	240	40967
12	5120	23597	21986	3909	179	54791
13	4168	5095	4672	13372	115	27422
14	3180	91	14891	23939	354	42455
15	30223	8198	2764	780	164	42129
16	1250	352	1055	0	616	3273
17	7694	2821	3571	458	21	14565
18	645	277285	67475	26	166	345597
19	1764	109	58	2376	188	4495
20	4032	40835	565	232	314	45978
21	7305	18	255	176	5	7759
22	12551	0	10	4	81	12646
23	27536	28036	4402	3642	468	64084
24	0	241	50136	0	17	50394
25	4864	25638	13	114	669	31298
26	144342	515834	207122	117864	5360	990522
27	237938	550475	249902	136066	8473	1182854
28	824724	534985	2655429	8748773	183518	12947429
29	1062662	1085460	2905331	8884839	191991	14130283

1968

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	4626	0	0	0	4626
2	470	32199	0	872	28	33569
3	145	408	0	0	0	553
4	0	3863	0	0	2	3865
5	0	35990	0	0	196	36186
6	18	0	0	0	0	18
7	5833	6962	4167	0	3	16965
8	7108	28	583	0	24	7743
9	7972	0	0	0	0	7972
10	2487	828	3344	50169	1525	58353
11	9582	838	22081	5563	179	38243
12	3660	13955	18956	4406	125	41102
13	3214	4034	3865	12194	131	23438
14	3074	52	12137	18884	231	34378
15	30067	5816	2425	383	34	38725
16	1479	6	619	5	30	2139
17	7980	264	3142	791	13	12190
18	268	278753	78495	214	132	357862
19	1295	428	212	1109	63	3107
20	5250	27917	200	271	297	33935
21	4398	32	348	320	15	5113
22	10452	0	10	3	8	10473
23	21019	24187	3895	2706	360	52167
24	0	196	49458	4	0	49658
25	4617	23940	32	70	501	29160
26	130388	465322	203969	97964	3897	901540
27	219548	497548	233432	186111	5566	1142205
28	698636	629196	2201154	7433443	253345	11215774
29	918184	1126744	2434586	7619554	258911	12357979

1967

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	0	0	0	1	1
2	894	31618	15	624	78	33229
3	971	8442	0	0	0	9413
4	0	2285	0	2	0	2287
5	0	30851	0	22	93	30966
6	12	0	0	2	1	15
7	6567	25432	4424	0	137	36560
8	5341	33	550	0	0	5924
9	2890	0	0	27	0	2917
10	2370	713	4837	41775	1345	51040
11	12357	710	24911	4563	232	42773
12	3807	12871	16121	463	209	33471
13	3180	5017	4807	11923	148	25075
14	1799	53	0	10332	193	12377
15	24547	4021	2130	449	289	31436
16	759	9	968	0	10	1746
17	10257	427	2684	9	6	13383
18	372	232613	43229	26	88	276328
19	1456	338	155	40	232	2221
20	4567	26627	54	262	350	31860
21	5514	8	268	520	26	6336
22	11624	3	32	3	5	11667
23	16532	7881	3372	1446	305	29536
24	0	319	59972	1	1	60293
25	6950	22109	64	24	434	29581
26	122766	412380	168593	72513	4183	780435
27	208337	461805	214193	83493	5810	973638
28	675153	600463	2096015	6466474	263456	10101561
29	883490	1062268	2310208	6549967	269266	11075199

1966

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	2984	0	0	0	2984
2	265	34617	255	316	17	35470
3	308	12221	0	0	0	12529
4	0	5955	201	0	1	6157
5	0	32544	0	0	9	32553
6	77	0	0	2	1	80
7	6095	28552	4499	0	343	39489
8	2993	0	102	0	0	3095
9	5131	0	0	0	0	5131
10	1660	545	5059	29641	2006	38911
11	10907	1091	24439	3464	192	40093
12	3349	18026	19995	41	41	41452
13	3707	3537	3995	9160	194	20593
14	931	21	0	5447	183	6582
15	25537	8020	1270	898	52	35777
16	689	17	1167	0	18	1891
17	9186	0	2350	71	13	11620
18	194	166447	48303	3	112	215059
19	770	316	4	47	78	1215
20	8116	28413	73	383	297	37282
21	4261	6	868	489	7	5631
22	11378	34	15	2	11	11440
23	15922	13941	2505	938	233	33539
24	9	434	38063	0	5	38511
25	7232	21612	7	4	271	29126
26	118717	379333	153170	50906	4084	706210
27	195874	432009	188816	57415	5398	879512
28	608777	591203	2044321	5425993	316633	8986927
29	804651	1023212	2233137	5483408	322031	9866439

1965

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	1741	0	0	0	1741
2	490	30646	179	400	50	31765
3	665	4619	0	0	0	5284
4	0	11480	0	14	11	11505
5	0	42110	0	3	0	42113
6	70	0	283	0	0	353
7	4870	5332	755	6	290	11253
8	1372	39	3	0	0	1414
9	6456	0	0	0	0	6456
10	2022	455	4132	23422	1012	31043
11	15040	836	23929	3500	119	43424
12	2752	13440	24054	20	7	40273
13	2805	2891	2292	6374	83	14445
14	848	5	4479	3946	54	9332
15	26699	6755	1770	323	25	35572
16	740	13	940	1	19	1713
17	13735	557	2504	6	10	16812
18	396	208366	45890	5	12	254669
19	321	99	0	38	75	533
20	7100	28229	148	408	114	35999
21	5085	15	189	6	7	5302
22	10134	18	30	2	9	10193
23	15427	8975	1785	792	268	27247
24	19	257	43053	10	1	43340
25	6514	15981	9	0	45	22549
26	123560	382859	156424	39276	2211	704330
27	210728	432425	184944	46613	3767	878477
28	558964	573849	1929479	4429666	262712	7754670
29	769692	1006274	2114423	4476279	266479	8633147

1964

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	3118	0	4	0	3122
2	337	30489	2	213	44	31085
3	525	1854	0	0	0	2379
4	0	11216	0	2	1	11219
5	0	18547	0	0	6	18553
6	61	0	0	0	0	61
7	6274	3868	955	1	166	11264
8	245	1051	0	0	0	1296
9	13394	0	0	0	0	13394
10	1441	510	4201	19578	592	26322
11	11392	1794	20030	2839	66	36121
12	2923	14341	17242	3	58	34567
13	2497	1757	1552	3573	41	9420
14	703	12	5052	3254	42	9063
15	30328	7592	1494	80	39	39533
16	900	359	469	0	27	1755
17	13883	178	776	2	51	14890
18	1040	242908	26602	13	59	270622
19	227	86	2	27	70	412
20	17365	29990	43	322	138	47858
21	1990	15	1446	2	12	3465
22	7616	11	23	4	16	7670
23	14077	6415	1818	760	116	23186
24	0	87	34792	3	3	34885
25	18531	17097	16	0	10	35654
26	145749	393295	116515	30680	1557	687796
27	241903	441008	144504	35565	2446	865426
28	552817	519654	1668484	3665637	215689	6622281
29	794720	960662	1812988	3701202	218135	7487707

1963

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	0	0	0	0	0
2	416	42270	0	109	3	42798
3	699	569	0	0	0	1268
4	0	5169	0	0	0	5169
5	0	50290	0	0	0	50290
6	56	0	0	0	0	56
7	4594	1647	1635	1	0	7877
8	626	103	0	0	0	729
9	8606	0	0	0	0	8606
10	1691	440	3388	15344	335	21198
11	27185	1231	21746	2468	33	52663
12	2572	16427	12600	6	27	31632
13	1925	911	829	1475	7	5147
14	288	14	3304	2247	23	5876
15	26002	9025	1230	51	53	36361
16	664	4	470	7	125	1270
17	12070	890	599	3	13	13575
18	580	220309	22547	4	56	243496
19	191	129	21	34	51	426
20	17549	33544	105	173	154	51525
21	12592	68	354	3	24	13041
22	6831	2	25	0	10	6868
23	11955	8092	2929	607	152	23735
24	0	195	35803	0	0	35998
25	17382	13915	13	1	23	31334
26	154474	405244	107598	22533	1089	690938
27	237386	450370	129385	25338	1930	844409
28	542764	446926	1441624	3147059	135428	5713801
29	780150	897296	1571009	3172397	137358	6558210

1962

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	0	2	0	0	2
2	404	31192	0	117	22	31735
3	668	35	0	0	0	703
4	0	10034	0	0	0	10034
5	0	40039	0	0	111	40150
6	65	0	0	0	0	65
7	3550	674	1480	1	0	5705
8	93	28	0	0	0	121
9	5214	0	0	0	0	5214
10	1440	492	1991	14558	408	18889
11	18864	1830	20304	2398	84	43480
12	1548	17760	8928	6	9	28251
13	1622	1145	504	1132	118	4521
14	123	20	1449	1291	27	2910
15	24516	6067	941	44	31	31599
16	675	40	324	2	75	1116
17	13708	1412	528	2	8	15658
18	436	207648	16084	3	105	224276
19	112	21	19	16	49	217
20	9259	29849	66	450	96	39720
21	2447	123	207	4	22	2803
22	7550	8	53	0	6	7617
23	10768	9764	3256	475	153	24416
24	0	127	35725	2	2	35856
25	8066	15255	21	3	29	23374
26	111128	373563	91882	20504	1355	598432
27	176113	409090	113391	22948	1970	723512
28	488309	417374	1375390	3127660	125531	5534264
29	664422	826464	1488781	3150608	127501	6257776

1961

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	0	0	0	0	0
2	403	21115	0	104	0	21622
3	794	52	0	0	0	846
4	0	19973	251	0	1	20225
5	0	41393	0	0	0	41393
6	48	0	0	0	0	48
7	2164	1080	252	0	9	3505
8	123	5	0	0	9	137
9	5600	0	0	0	0	5600
10	1132	345	1075	11008	583	14143
11	12979	2531	15733	2068	153	33464
12	1839	13079	8938	2	35	23893
13	1440	483	261	916	133	3233
14	287	0	945	572	53	1857
15	24027	3749	1187	23	95	29081
16	630	19	521	0	47	1217
17	12486	27	500	3	7	13023
18	511	192259	23508	168	193	216639
19	250	19	80	38	96	483
20	10029	27799	156	432	95	38511
21	4491	19	382	124	18	5034
22	7288	71	21	0	11	7391
23	10003	4724	2635	692	139	18193
24	0	379	30750	0	8	31137
25	10387	12563	32	0	47	23029
26	106911	341684	87227	16150	1732	553704
27	171356	378037	103792	18387	2850	674422
28	457447	384760	1284389	2868885	98674	5094155
29	628803	762797	1388181	2887272	101524	5768577

1960

	SITC#1	SITC#2	SITC#3	SITC#4	SITC#5	TOTAL
1	0	8434	0	0	0	8434
2	681	29941	0	111	7	30740
3	721	0	0	0	1	722
4	0	22165	138	0	0	22303
5	0	37402	0	0	0	37402
6	59	0	0	0	0	59
7	3413	918	26	0	1	4358
8	156	13	39	0	0	208
9	2100	0	0	0	0	2100
10	1369	336	936	12343	550	15534
11	11340	2130	13613	2085	184	29352
12	1786	19968	6578	3	45	28380
13	2868	1302	287	936	245	5638
14	61	0	573	489	27	1150
15	20833	2856	1152	8	34	24883
16	445	18	265	1	18	747
17	12194	224	298	3	65	12784
18	345	175250	19501	18	76	195190
19	15	100	23	2398	78	2614
20	10809	26534	46	194	105	37688
21	6253	167	589	188	46	7243
22	3238	69	44	0	1	3352
23	12535	6575	1314	428	154	21006
24	0	71	32447	2	0	32520
25	9139	9717	13	1	52	18922
26	100360	344190	77882	19208	1689	543329
27	161784	372599	88835	21370	2414	647002
28	420469	372611	1246043	2705001	91569	4835693
29	582253	745210	1334878	2726371	93983	5482695

APPENDIX C

ANNUAL VALUE AND VOLUME OF CANADIAN IMPORTS FOR EACH OF THE SLDC's

This appendix documents in value and volume terms all imports which totaled at least five percent of any SLDC's exports to Canada. The listing uses the SITC commodity codes which are defined in product terms on the following pages. To facilitate the documentation of this substantial amount of data, a code was used to indicate the year, whether it is value or volume shown, and the SLDC involved. Using the first entry shown on page 105, the following is a key to interpreting this code:

1101 26410 140589 86387 50254 27064 4879 7155...

1 1 01 26410...

- 26410... : SITC commodity code
- 01 : SLDC country number
- 1 : 1. indicates years 1975-1969; 2. indicates years 1968-1962; 3. indicates years 1961-1960
- 1 : 1. indicates value terms, in thousands of dollars; 2. indicates volume terms

Table C.1: Commodity Codes Used in SITC #1

Code	Product Name	Volume Unit
01703	corned beef	lbs.
03052	marine animals	cwt.
07109	bananas	lbs.
07118	grapes	lbs.
07278	strawberries	lbs.
07538	orange juice	lbs.
08225	cashews	lbs.
08280	walnuts	lbs.
09190	tomatoes	lbs.
09565	mushrooms	lbs.
10119	raw sugar	cwt.
10170	molasses	cwt.
11110	cocoa	lbs.
11210	green coffee	lbs.
11230	instant coffee	lbs.
11310	tea	lbs.
17330	distilled beverages	gals.
18130	tobacco	lbs.
24410	raw cotton	lbs.
27930	fluospar	tons

The following codes involved an aggregation of the commodities noted:

03052: 03052-04649
11110: 11110-11162
17330: 17330-17360
18130: 18130-18330.

Table C.2: Commodity Codes Used in SITC #2

Code	Product Name	Volume Unit
21620	natural rubber	lbs.
25120	iron ore	tons
25210	bauxite	cwt.
25230	alumina	cwt.
25339	copper concentrate	cwt.
25840	magnesium	cwt.
25899	ores in concentrate	cwt.
26410	crude petroleum	bbl.

Table C.3: Commodity Codes Used in SITC #3

Code	Product Name	Volume Unit
33179	lumber	m.b.f.
33841	plywood	sq.yds.
36903	baler twine	lbs.
37343	print cloth	lbs.
37381	corduroys	lbs.
37404	jute fabrics	lbs.
39316	coconut oil	cwt.
39344	palm kernel oil	cwt.
39348	palm oil	cwt.
39352	peanut oil	cwt.
41633	fertilizer	cwt.
43149	fuels	gals.
45204	copper alloys	cwt.
45550	silver	troy oz.
45608	tin blocks	cwt.

The following codes involved an aggregation of the commodities noted:

33841: 33841-33857
37404: 37404-37412
43149: 43149-43259
45204: 45204-45215.

Table C.4: Commodity Codes Used in SITC #4

Code	Product Name	Volume Unit
58819	auto motors	no.
58999	auto parts	--
63711	television sets	no.
63737	radioes	no.
63831	integrated circuits	no.
78332	pants	no.
78341	shirts	no.
78373	pants	no.
78414	blouses	no.
78470	sweaters	no.
78489	sweat shirts	no.
79390	footwear	pairs
83789	toys	--
84432	rugs	sq.yds.
87134	pharmaceuticals	--
94952	ornamental flowers	--
94999	end products, n.e.s.	--

The following codes involved an aggregation of the commodities noted:

63711: 63711-63718
78332: 78332-78335
78470: 78470-78479
79390: 79390-79899
87134: 87134-87160.

1101	26410	140589	86387	50254	27064	4879	7155	14914
2101	26410	4626	0	2984	1741	3118	0	0
3101	26410	0	8434	0	0	0	0	0
1201	26410	12681188	8950299	20731965	14169103	2960906	4878478	9001889
2201	26410	2507003	0	1776732	957319	1772717	0	0
3201	26410	0	4288247	0	0	0	0	0
1102	26410	756095	616487	129833	69405	65218	32705	28671
2102	26410	32183	31608	34549	30644	30489	42270	31189
3102	26410	21115	29941	0	0	0	0	0
1202	26410	68872164	72548938	55258650	35493184	35037099	19157657	18468526
2202	26410	20742317	20183934	21566828	18193380	16930092	23892907	17494664
3202	26410	11748425	15477253	0	0	0	0	0
1103	26410	132819	35727	19957	12638	16634	14342	7802
2103	26410	408	8442	12221	4619	1854	569	0
3103	26410	0	0	0	0	0	0	0
1203	26410	12221276	3510128	7880161	5941284	9147597	8977355	4710032
2203	26410	240621	5486664	7515508	2677637	1116478	287294	0
3203	26410	0	0	0	0	0	0	0
1104	26410	110505	64720	3684	1950	0	7040	6068
2104	26410	3863	2285	5955	11480	11216	5169	10034
3104	26410	19973	22165	0	0	0	0	0
1204	26410	10560689	9002786	1516204	1112752	0	5286562	4415023
2204	26410	2662246	1609177	4125869	7270861	7069430	3263905	6081079
3204	26410	12605649	13769587	0	0	0	0	0
1105	26410	745904	318838	60168	54633	27214	24050	26750
2105	26410	35940	30851	32543	42110	18545	50290	40039
3105	26410	41303	37402					
1205	26410	69160446	33265198	26169846	28214151	15669285	13729567	15637538
2205	26410	18605582	14755308	15965021	19206948	8002695	21799015	17932434
3205	26410	19065027	16229897	0	0	0	0	0
1106	26410	196577	104228	23774	0	0	0	0
2106	26410	0	0	0	0	0	0	0
3106	26410	0	0	0	0	0	0	0
1206	26410	17913164	12594090	10138392	0	0	0	0
2206	26410	0	0	0	0	0	0	0
3206	26410	0	0	0	0	0	0	0

1106	43109	0	0	0	536	1414	0	0
2106	43109	0	0	0	0	0	0	0
3106	43109	0	0	0	0	0	0	0
1206	43109	0	0	0	9601023	23304269	0	0
2206	43109	0	0	0	0	0	0	0
3206	43109	0	0	0	0	0	0	0
1107	11110	937	4505	9705	5027	6326	4411	477
2107	11110	4022	6534	6069	4841	6251	4577	3536
3107	11110	2110	3372	0	0	0	0	0
1207	11110	1407632	6997386	23494440	18462280	20427280	10964800	1232030
2207	11110	13552000	25309117	26978895	26691670	24254380	19217582	16260400
3207	11110	9695900	13070100	0	0	0	0	0
1107	26410	76819	48621	68856	54190	48067	34432	14966
2107	26410	5336	21323	24257	1651	0	0	262
3107	26410	0	0	0	0	0	0	0
1207	26410	6466202	5134077	20783896	19708670	19848419	18121624	7683831
2207	26410	2824566	11681020	13041774	849156	0	0	130197
3207	26410	0	0	0	0	0	0	0
1107	39348	0	0	1700	260	818	3835	3498
2107	39348	4065	4408	4499	755	954	1462	1448
3107	39348	252	0	0	0	0	0	0
1207	39348	0	0	69022	19673	52396	239138	252146
2207	39348	306349	323117	325469	52052	80914	118738	108179
3207	39348	26110	0	0	0	0	0	0
1107	45608	76	305	249	370	1808	956	2018
2107	45608	85	0	0	0	0	164	0
3107	45608	0	0	0	0	0	0	0
1207	45608	224	1551	1344	2316	11312	5258	13380
2207	45608	560	0	0	0	0	1247	0
3207	45608	0	0	0	0	0	0	0
1108	11210	348	846	3401	9796	9556	9634	6138
2108	11210	7108	5341	2993	1372	245	626	93
3108	11210	123	155	0	0	0	0	0
1208	11210	529118	1417244	7280490	23781178	23695171	24906969	19514454
2208	11210	21126949	16228851	8743285	4121219	633480	2135864	458913
3208	11210	661918	669597	0	0	0	0	0

1108	26410	14	93584	50181	35348	14871	0	0
2108	26410	0	0	0	0	0	0	0
3108	26410	0	0	0	0	0	0	0
1208	26410	1178	7877441	5298944	12858494	6142503	0	0
2208	26410	0	0	0	0	0	0	0
3208	26410	0	0	0	0	0	0	0
1109	10119	62995	76610	28354	18125	11495	14831	14128
2109	10119	7135	2880	5127	6389	13008	8606	5215
3109	10119	5600	2100	0	0	0	0	0
1209	10119	1864271	3474077	3959317	3102702	3611719	2308941	4477454
2209	10119	2790451	1098059	1901343	2090940	2776190	1099604	1491759
3209	10119	1764506	579940	0	0	0	0	0
1110	63737	1625	2266	2516	7684	3238	2622	2083
2110	63737	996	1489	833	763	605	328	131
3110	63737	59	29	0	0	0	0	0
1210	63737	118414	266855	368508	2287493	746704	516935	435926
2210	63737	229144	403068	252701	197579	140018	71174	21980
3210	63737	7522	2705	0	0	0	0	0
1110	78332	8954	3550	3640	5312	5408	6056	7555
2110	78332	6370	4811	3020	2085	1743	1590	1374
3110	78332	1460	0	0	0	0	0	0
1210	78332	2379962	1254363	1938172	3411827	3564235	4214555	5175477
2210	78332	4497962	3764135	2661672	2070831	1888127	1756486	1594253
3210	78332	1713529	0	0	0	0	0	0
1110	78470	15675	9326	6408	4203	3438	3555	6255
2110	78470	5407	3144	2769	1550	331	215	143
3110	78470	159	0	0	0	0	0	0
1210	78470	6786278	3909232	2430970	1824815	1603489	1654234	2714996
2210	78470	2457332	1597062	1356256	457132	78367	88620	25419
3210	78470	36327	0	0	0	0	0	0
1110	83789	6488	7054	5418	4937	3861	3361	3620
2110	83789	2938	1915	1540	1508	1485	1344	960
3110	83789	555	462	0	0	0	0	0
1210	83789	0	0	0	0	0	0	0
2210	83789	0	0	0	0	0	0	0
3210	83789	0	0	0	0	0	0	0

1110 94952	1249	1972	1894	1422	1115	1726	1886
2110 94952	1867	2032	1839	1685	1793	1790	1790
3110 94952	1790	1790	0	0	0	0	0
1210 94952	0	0	0	0	0	0	0
2210 94952	0	0	0	0	0	0	0
3210 94952	0	0	0	0	0	0	0
1110 94999	243	335	371	343	156	184	4129
2110 94999	3003	3387	1638	383	73	373	523
3110 94999	407	374	0	0	0	0	0
1210 94999	0	0	0	0	0	0	0
2210 94999	0	0	0	0	0	0	0
3210 94999	0	0	0	0	0	0	0
1111 08225	4731	8602	6409	7778	5108	3250	3005
2111 08225	3156	2374	1698	2374	2122	1758	1450
3111 08225	1676	1454	0	0	0	0	0
1211 08225	4523416	8201771	9133060	11176833	8057135	4782970	4620308
2211 08225	4692011	4034018	2589331	3919084	3723322	4000546	3205382
3211 08225	3541370	3096212	0	0	0	0	0
1111 10119	0	0	0	2720	9852	5581	0
2111 10119	602	3278	2938	3493	0	16317	8069
3111 10119	0	0	0	0	0	0	0
1211 10119	0	0	0	425234	1623504	1298657	0
2211 10119	260187	1321086	1124771	1164353	0	2095942	2376375
3211 10119	0	0	0	0	0	0	0
1111 11310	5025	4259	2239	3334	3881	3720	3620
2111 11310	4564	5086	4862	7097	7662	7356	7283
3111 11310	8869	8483	0	0	0	0	0
1211 11310	8576047	8149077	4872783	7334679	8179140	7636015	7445990
2211 11310	9290859	9197959	8567417	11909050	12527375	12189924	13334020
3211 11310	15715691	15311974	0	0	0	0	0
1111 37404	7230	15433	11791	17549	16108	15366	20049
2111 37404	17729	20623	19904	18144	15078	16515	15573
3111 37404	11906	9810	0	0	0	0	0
1211 37404	21590183	48938025	40563475	60852699	65683838	67087347	83613981
2211 37404	84903367	91425620	80286971	80115789	76933756	84252800	77394011
3211 37404	59189830	64871505	0	0	0	0	0

1111	84432	1549	2768	2163	1159	866	1532	2586
2111	84432	2299	1901	1842	1736	1396	1389	1337
3111	84432	1164	1162	0	0	0	0	0
1211	84432	98999	191470	186059	139151	89544	157900	264585
2211	84432	227375	186842	191624	165468	147079	144815	144109
3211	84432	123803	126159	0	0	0	0	0
1112	21620	25938	36938	31712	17163	16420	20603	22905
2112	21620	13660	11900	16337	12614	14196	16285	17694
3112	21620	12994	19885	0	0	0	0	0
1212	21620	98539159	102269751	129884549	122536142	105669155	103278053	100398129
2212	21620	85479647	65729009	73489007	57403566	60132453	66293886	69138307
3212	21620	51818535	57285399	0	0	0	0	0
1112	39344	15917	17729	9387	6358	4623	7610	4684
2112	39344	4081	4245	6583	4483	2029	3512	4547
3112	39344	4684	1933	0	0	0	0	0
1212	39344	707641	493999	678637	767022	408245	574549	180972
2212	39344	248386	373902	545512	330370	178186	347383	454870
3212	39344	479078	193312	0	0	0	0	0
1112	45608	11798	6750	14972	14401	11400	14786	13194
2112	45608	10386	10508	12110	18503	14464	8669	4030
3112	45608	4009	4327	0	0	0	0	0
1212	45608	36073	18030	76781	87440	70179	83824	81540
2212	45608	67087	64644	68171	95382	90446	69319	33410
3212	45608	35864	43931	0	0	0	0	0
1112	63831	5176	15409	9256	700	195	219	0
2112	63831	0	0	0	0	0	0	0
3112	63831	0	0	0	0	0	0	0
1212	63831	12897061	32119858	15531506	1143073	692576	616768	0
2212	63831	0	0	0	0	0	0	0
3212	63831	0	0	0	0	0	0	0
1113	08280	2918	4454	4151	2429	2098	2481	2501
2113	08280	2311	2498	3159	2652	2358	1865	1563
3113	08280	1397	2713	0	0	0	0	0
1213	08280	5570233	5963796	6894176	6218279	5679312	4928797	6038785
2213	08280	6744686	7241111	7786002	6510613	5748226	4545829	3782975
3213	08280	3767346	7479461	0	0	0	0	0

1113 09565	1986	1237	885	1375	1075	447	744
2113 09565	99	1	0	0	0	0	0
3113 09565	0	0	0	0	0	0	0
1213 09565	5416338	3554600	2501635	3961853	3091405	1536480	2252640
2213 09565	288227	4200	0	0	0	0	0
3213 09565	0	0	0	0	0	0	0
1113 37343	621	1911	1104	2826	1431	511	1033
2113 37343	591	767	930	177	399	0	68
3113 37343	0	0	0	0	0	0	0
1213 37343	790932	1648911	1470157	5082304	2717518	848001	1839136
2213 37343	1174693	1629099	1879574	356801	691387	0	145458
3213 37343	0	0	0	0	0	0	0
1113 45608	1367	1261	2081	2086	0	0	0
2113 45608	0	0	0	0	0	0	0
3113 45608	0	0	0	0	0	0	0
1213 45608	4214	4188	11032	12681	0	0	0
2213 45608	0	0	0	0	0	0	0
3213 45608	0	0	0	0	0	0	0
1113 78341	2255	2702	1228	1017	1281	616	525
2113 78341	270	665	497	345	316	230	163
3113 78341	107	64	0	0	0	0	0
1213 78341	1103094	1603712	1076676	1051288	1314632	712152	565736
2213 78341	309137	588716	567218	434312	444209	345038	231767
3213 78341	185617	111034	0	0	0	0	0
1113 78373	3227	4105	5825	4115	1737	1214	1105
2113 78373	867	620	568	583	401	0	0
3113 78373	0	0	0	0	0	0	0
1213 78373	2043229	2421406	4710242	3694352	1593798	1116240	1008288
2213 78373	735982	507240	471792	504336	393684	0	0
3213 78373	0	0	0	0	0	0	0
1114 09565	5182	4742	3833	6537	3555	2211	2250
2114 09565	2475	1254	569	583	492	100	47
3114 09565	9	0	0	0	0	0	0
1214 09565	12423063	11798644	10998067	18600011	10118841	6502633	6520204
2214 09565	7120914	3192001	1436834	1444606	1513626	331781	156840
3214 09565	22500	0	0	0	0	0	0

1114	33841	13626	21927	22857	17078	14177	9570	12160
2114	33841	9584	9408	4917	3275	3878	2382	1132
3114	33841	0	0	0	0	0	0	0
1214	33841	236163558	292078978	345862709	415199764	332506356	135171303	158536382
2214	33841	124773607	127099483	68710821	50621248	57787426	34028123	17552310
3214	33841	0	0	0	0	0	0	0
1114	63711	4772	8762	6792	3846	2272	1038	252
2114	63711	293	0	0	0	0	0	0
3114	63711	0	0	0	0	0	0	0
1214	63711	59141	119093	96625	63684	37858	20231	4673
2214	63711	5532	0	0	0	0	0	0
3214	63711	0	0	0	0	0	0	0
1114	78414	7835	6986	6604	4755	2148	880	327
2114	78414	252	260	33	1	0	0	0
3114	78414	0	0	0	0	0	0	0
1214	78414	8704538	9273823	10534258	7717454	3308348	1338962	643320
2214	78414	527676	462912	68130	7200	0	0	0
3214	78414	0	0	0	0	0	0	0
1114	78440	10722	8613	9716	8912	5897	5180	4635
2114	78440	2797	1200	604	462	139	0	0
3114	78440	0	0	0	0	0	0	0
1214	78440	8300488	5628560	8305733	8957647	5915044	4801653	3898064
2214	78440	2111294	917950	481953	992693	392920	0	0
3214	78440	0	0	0	0	0	0	0
1114	78489	11230	5548	4095	3588	2424	1029	365
2114	78489	529	152	139	111	40	1	0
3114	78489	0	0	0	0	0	0	0
1214	78489	11662178	5680845	5289659	5657976	3433505	1657472	829956
2214	78489	1364334	541482	875880	714008	319200	3888	0
3214	78489	0	0	0	0	0	0	0
1114	79390	7627	8763	8842	15182	12039	6586	5545
2114	79390	3320	2188	1331	949	676	248	95
3114	79390	0	0	0	0	0	0	0
1214	79390	5015344	7732719	11516376	20326709	15479555	10543923	8983637
2214	79390	5602038	3442384	1886567	1625961	1163900	448069	210192
3214	79390	0	0	0	0	0	0	0

1115 01703	4136	3365	3285	3486	2185	1579	27	
2115 01703	331	460	566	294	83	25	0	
3115 01703	0	2	0	0	0	0	0	
1215 01703	5035176	3173537	4655628	5524960	3469984	3522723	72000	
2215 01703	804259	1182935	1545499	854634	219600	108000	0	
3215 01703	0	4500	0	0	0	0	0	
1115 07538	10829	3329	5252	4494	4092	1531	3308	
2115 07538	2742	1062	1699	396	1854	2670	0	
3115 07538	0	0	0	0	0	0	0	
1215 07538	44590712	12800666	24354599	20626051	19479309	6470597	10624676	
2215 07538	10696272	4209205	6379706	1390949	3054908	3467321	0	
3215 07538	0	0	0	0	0	0	0	
1115 11110	7460	7862	1704	1112	1219	1442	843	
2115 11110	558	433	762	99	312	681	1851	
3115 11110	1416	1281	0	0	0	0	0	
1215 11110	12042695	10289177	6021112	5900161	6831063	3750636	2724652	
2215 11110	2621560	2406001	3007104	2324221	2227732	1304902	3870898	
3215 11110	3266173	3568898	0	0	0	0	0	
1115 11210	21095	8280	18515	21541	24774	23270	23063	
2115 11210	23626	20509	19985	22950	27074	21357	21502	
3115 11210	21513	18541	0	0	0	0	0	
1215 11210	30213459	12339484	29599179	46681049	56595008	43706645	58556571	
2215 11210	61842082	52468727	48176596	50970320	59612389	64679946	64280057	
3215 11210	60405773	54283184	0	0	0	0	0	
1115 11230	4014	6530	5460	3514	1049	5826	1548	
2115 11230	1273	762	268	0	0	0	0	
3115 11230	0	0	0	0	0	0	0	
1215 11230	2462511	4498294	4478865	3663312	949057	6108034	1736271	
2215 11230	1501177	835681	307754	0	0	0	5	
3215 11230	0	0	0	0	0	0	0	
1115 25120	19200	9469	6952	352	1090	1301	1533	
2115 25120	3536	1062	3145	2419	3708	4405	1659	
3115 25120	1851	1606	0	0	0	0	0	
1215 25120	760302	560609	533439	39984	100372	161005	195569	
2215 25120	417872	121642	367195	290332	416924	386322	174127	
3215 25120	193439	175729	0	0	0	0	0	

1115 25840	2495	2750	1308	1411	2469	1873	2857
2115 25840	561	634	2233	1095	878	584	460
3115 25840	701	254	0	0	0	0	0
1215 25840	342429	685327	511588	663457	1080000	827442	1218964
2215 25840	224779	232440	734978	353899	310607	412675	214911
3215 25840	335709	130435	0	0	0	0	0
1115 25899	0	1	1874	512	115	1154	555
2115 25899	155	149	60	44	15	0	0
3115 25899	0	0	0	0	0	0	0
1215 25899	0	109	24455	7693	1763	18480	9491
2215 25899	2612	1987	1102	652	331	0	0
3215 25899	0	0	0	0	0	0	0
1115 58819	38866	9411	0	0	0	0	0
2115 58819	0	0	0	0	0	0	0
3115 58819	0	0	0	0	0	0	0
1215 58819	104929	29110	0	0	0	0	0
2215 58819	0	0	0	0	0	0	0
3215 58819	0	0	0	0	0	0	0
1116 07118	2723	2172	1529	1240	1276	882	751
2116 07118	822	336	341	376	404	350	316
3116 07118	339	184	0	0	0	0	0
1216 07118	6657584	5383573	3722379	3262035	4015141	2944657	3361336
2216 07118	3281506	1405712	1559373	1751270	1820047	1390575	1353385
3216 07118	1496664	1004483	0	0	0	0	0
1116 25339	58	28614	21428	366	724	0	0
2116 25339	0	0	0	0	0	0	0
3116 25339	0	0	0	0	0	0	0
1216 25339	978	626570	364128	5467	19055	0	0
2216 25339	0	0	0	0	0	0	0
3216 25339	0	0	0	0	0	0	0
1116 25899	8059	5986	9009	2946	0	0	0
2116 25899	0	0	0	0	237	0	0
3116 25899	0	0	0	0	0	0	0
1216 25899	84045	59123	876132	188194	0	0	0
2216 25899	0	0	0	0	11319	0	0
3216 25899	0	0	0	0	0	0	0

1116	41633	1088	1008	533	476	443	356	395
2116	41633	598	953	1091	863	444	386	207
3116	41633	278	54	0	0	0	0	0
1216	41633	153953	179527	154684	166741	148375	132086	157309
2216	41633	236167	363621	416246	331291	171625	143540	78288
3216	41633	113229	22000	0	0	0	0	0
1116	45204	4062	14771	2263	622	5688	25	19
2116	45204	15	5	0	0	0	0	0
3116	45204	82	55	0	0	0	0	0
1216	45204	73391	167426	26496	12619	124825	260	5483
2216	45204	74	80	0	0	0	0	0
3216	45204	2290	1456	0	0	0	0	0
1117	11210	17057	17180	13121	8041	8901	7165	7155
2117	11210	7921	9925	8964	13382	13820	12018	13690
3117	11210	12464	12159	0	0	0	0	0
1217	11210	22203648	23657080	18556286	14892263	18015811	12239657	16283191
2217	11210	17800411	22052299	17726562	26503130	27699626	29194573	32467467
3217	11210	28723712	28699119	0	0	0	0	0
1117	26410	0	5930	8157	9449	16639	14217	2789
2117	26410	0	0	0	0	0	0	0
3117	26410	0	0	0	0	0	0	0
1217	26410	0	911418	3227152	4419564	8385571	7070237	1377162
2217	26410	0	0	0	0	0	0	0
3217	26410	0	0	0	0	0	0	0
1117	33179	389	745	1052	1176	1035	1096	978
2117	33179	1437	1029	609	753	282	1	0
3117	33179	0	2	0	0	0	0	0
1217	33179	2125	3767	7357	9475	8845	8732	6714
2217	33179	10684	7828	5056	5635	2001	140	0
3217	33179	0	280	0	0	0	0	0
1117	37381	1159	4242	3001	3777	2471	2096	1136
2117	37381	605	542	541	512	221	135	171
3117	37381	0	0	0	0	0	0	0
1217	37381	1029775	3120562	3186259	5217894	3720387	3239652	1863933
2217	37381	957325	834213	853074	800987	343109	204107	252159
3217	37381	0	0	0	0	0	0	0

1118	26410	1059469	1190924	475440	359670	340267	280717	277030
2118	26410	278740	232476	166109	208363	242908	220229	207647
3118	26410	192202	175041	0	0	0	0	0
1218	26410	93519526	128126083	148834427	136073489	143565570	130132136	124993687
2218	26410	124274521	103345461	71840047	88994620	102308495	90085126	85206014
3218	26410	81556260	72761878	0	0	0	0	0
1118	43149	43149	96707	43469	48145	46524	56694	67060
2118	43149	78344	42030	48136	44543	25394	22180	16003
3118	43149	23319	19384	0	0	0	0	0
1218	43149	172586963	374342561	565111425	669408262	729855792	946059044	1058648240
2218	43149	1199784153	708325936	770798089	696812481	366803135	298155059	222557478
3218	43149	285051180	287333917	0	0	0	0	0
1119	17330	829	1808	2770	1876	1266	1153	1174
2119	17330	1295	1169	491	54	13	2	0
3119	17330	116	0	0	0	0	0	0
1219	17330	270282	602309	991845	724434	483060	159652	145059
2219	17330	177897	150769	66093	20058	3255	313	0
3219	17330	104849	0	0	0	0	0	0
1119	26410	10098	0	0	0	0	0	0
2119	26410	0	0	0	0	0	0	0
3119	26410	0	0	0	0	0	0	0
1219	26410	939211	0	0	0	0	0	0
2219	26410	0	0	0	0	0	0	0
3219	26410	0	0	0	0	0	0	0
1119	43209	6996	15419	6264	11140	16252	3199	0
2119	43209	118	155	0	0	0	0	0
3119	43209	0	0	0	0	0	0	0
1219	43209	21787856	45712219	64728287	121610154	160536730	41357651	0
2219	43209	1922128	2638563	0	0	0	0	0
3219	43209	0	0	0	0	0	0	0
1119	87134	2546	1713	1148	2967	2586	1561	2262
2119	87134	1027	0	0	0	0	0	0
3119	87134	0	0	0	0	0	0	0
1219	87134	0	0	0	0	0	0	0
2219	87134	0	0	0	0	0	0	0
3219	87134	0	0	0	0	0	0	0

1120	17330	4323	3581	2382	1787	1748	1190	899
2120	17330	678	852	479	468	284	325	301
3120	17330	312	333	0	0	0	0	0
1220	17330	453586	452206	355029	213475	368858	297510	180470
2220	17330	90638	262428	168285	158792	98993	91705	78096
3220	17330	121557	147769	0	0	0	0	0
1120	10119	0	4534	0	0	0	0	0
2120	10119	3765	2859	6227	5574	15467	15859	2016
3120	10119	8838	9234	0	0	0	0	8384
1220	10119	0	224932	0	0	0	0	0
2220	10119	1416629	997295	2166858	1777730	2041306	1792169	478754
3220	10119	2343862	2333188	0	0	0	0	2324351
1120	25230	10220	12757	16319	15878	25349	24531	40822
2120	25230	27898	26605	28345	28202	29968	33431	29813
3120	25230	27785	26500	0	0	0	0	0
1220	25230	1739475	3669237	4743111	4565972	7394049	6978898	11761040
2220	25230	8259464	8471513	9195442	9151789	9726011	10750873	9516855
3220	25230	8743492	8363646	0	0	0	0	0
1121	03052	10035	12689	7169	5757	2786	1942	1215
2121	03052	1578	654	194	366	323	102	0
3121	03052	0	0	0	0	0	0	0
1221	03052	40671	50737	36720	38095	21311	16136	12594
2221	03052	37087	17299	1994	3963	3352	1183	0
3221	03052	0	0	0	0	0	0	0
1121	10119	68139	58519	6888	3900	5943	4871	5046
2121	10119	2035	3009	2970	3209	28	656	89
3121	10119	1	648	0	0	0	0	0
1221	10119	3268678	2198445	979691	662217	1560119	1503865	1587584
2221	10119	1045854	1541806	1441167	1445737	5600	88625	27551
3221	10119	253	182219	0	0	0	0	0
1121	10170	658	2170	0	0	373	1290	0
2121	10170	0	0	0	0	0	0	0
3121	10170	170	192	0	0	0	0	0
1221	10170	331792	606853	0	0	352416	172878	0
2221	10170	0	0	0	0	0	0	0
3221	10170	216104	246498	0	0	0	0	0

1121	18130	1397	1935	1802	737	738	869	730
2121	18130	487	916	759	829	779	523	889
3121	18130	519	549	0	0	0	0	0
1221	18130	680934	1199040	1225596	475468	334424	709976	743808
2221	18130	420930	584022	869257	820326	735122	445638	711059
3221	18130	300739	339205	0	0	0	0	0
1121	36903	0	0	0	0	0	0	245
2121	36903	309	249	800	151	1310	286	187
3121	36903	367	518	0	0	0	0	0
1221	36903	0	0	0	0	0	0	2539781
2221	36903	2760000	2177605	6192620	920208	8818400	20282	1354900
3221	36903	2720000	4336400	0	0	0	0	0
1122	07109	10279	14011	15242	18159	17093	12515	12138
2122	07109	10183	11372	11231	9879	7336	6537	7350
3122	07109	7071	2743	0	0	0	0	0
1222	07109	88886894	171710406	194110610	234533799	233896062	153070581	142544106
2222	07109	126202803	137147834	142805172	121254486	87406205	82606320	90994936
3222	07109	94905000	46778300	0	0	0	0	0
1123	07278	3890	5227	4506	3020	1758	2100	3450
2123	07278	1533	1918	1920	2127	1169	725	776
3123	07278	627	515	0	0	0	0	0
1223	07278	14202585	18700033	16730450	14862711	10794155	11783427	17846746
2223	07278	7867058	10755906	9189189	10956102	6213488	4291190	4613643
3223	07278	3393700	3255231	0	0	0	0	0
1123	09190	6714	8286	9245	7982	10405	12235	10298
2123	09190	8769	6744	6381	5918	4647	3674	3002
3123	09190	2350	5016	0	0	0	0	0
1223	09190	37446939	58902379	83490467	69265727	70152492	107607258	104991509
2223	09190	67972159	75390660	67364482	56150902	52840112	53612979	56922435
3223	09190	49738957	75897041	0	0	0	0	0
1123	11210	7472	8144	7815	4414	5349	3927	4711
2123	11210	3815	2545	2220	3208	3049	2865	3269
3123	11210	2566	3036	0	0	0	0	0
1223	11210	11441648	12491270	13390523	9395864	11772234	7403315	11204771
2223	11210	8953491	6014931	4733258	6693083	6372824	7969689	8606199
3223	11210	6859445	7735245	0	0	0	0	0

1123	24410	5618	3987	4253	5051	2126	6315	22711
2123	24410	18882	4177	9767	4404	994	2415	3502
3123	24410	604	2054	0	0	0	0	0
1223	24410	13163163	7715249	11738407	16246645	7679733	24593840	80178010
2223	24410	59472255	14585277	36301867	15500391	3535687	8151200	12118200
3223	24410	2092700	7979800	0	0	0	0	0
1123	27930	6814	6856	5365	2777	7251	2669	2624
2123	27930	2557	2016	1572	1588	1653	1386	1610
3123	27930	871	1242	0	0	0	0	0
1223	27930	94034	117877	100908	51075	158102	63314	85135
2223	27930	97619	79027	60287	54785	58515	48549	52905
3223	27930	31927	51360	0	0	0	0	0
1123	36903	833	9939	4231	2584	1285	628	660
2123	36903	1001	1049	962	721	1029	575	44
3123	36903	265	135	0	0	0	0	0
1223	36903	1385783	22171618	24295983	23058245	13451134	6310208	6153667
2223	36903	8828726	8330430	7061505	4169760	4899600	4480000	295000
3223	36903	2013400	957900	0	0	0	0	0
1123	45550	0	2271	1404	0	0	0	22
2123	45550	1395	0	0	0	0	719	2067
3123	45550	1340	270	0	0	0	0	0
1223	45550	0	478137	538568	0	0	0	11619
2223	45550	651182	0	0	0	0	534814	1707583
3223	45550	1471221	300000	0	0	0	0	0
1123	58999	4289	2807	2344	1232	391	42	11
2123	58999	0	0	0	0	0	0	0
3123	58999	0	0	0	0	0	0	0
1223	58999	0	0	0	0	0	0	0
2223	58999	0	0	0	0	0	0	0
3223	58999	0	0	0	0	0	0	0
1124	43109	23699	65911	46941	34262	40825	53793	49212
2124	43109	49457	59732	37884	42955	34658	35720	35675
3124	43109	30604	32436	0	0	0	0	0
1224	43109	63286117	231069592	303446748	436087117	493942924	867307474	687419105
2224	43109	702798883	956366685	632310838	758376895	530571323	506042158	486504195
3224	43109	370748020	438107640	0	0	0	0	0

1125	10119	0	0	0	0	693	1972	2964
2125	10119	3349	4988	6416	6214	17845	16057	7320
3125	10119	9384	8276	0	0	0	0	0
1225	10119	0	0	0	0	136614	511400	832793
2225	10119	1381328	1960512	2265369	2021354	2523490	2016364	1901207
3225	10119	2638248	2117796	0	0	0	0	0
1125	10170	733	293	978	315	119	101	710
2125	10170	1147	1454	663	205	433	980	440
3125	10170	569	487	0	0	0	0	0
1225	10170	335519	85401	369387	333670	133728	76189	606075
2225	10170	1000464	1107114	730632	364086	354802	526846	452013
3225	10170	675160	896072	0	0	0	0	0
1125	17330	1150	1188	829	833	853	938	823
2125	17330	345	431	142	88	174	300	242
3125	17330	432	373	0	0	0	0	0
1225	17330	619448	847428	690382	679867	747944	724237	633658
2225	17330	229155	354838	92359	48182	127519	207777	180519
3225	17330	302148	274401	0	0	0	0	0
1125	25210	7659	10418	12280	14495	19302	19343	15844
2125	25210	15942	14406	13005	6968	7163	5934	6559
3125	25210	5402	4178	0	0	0	0	0
1225	25210	18092765	25067181	31192698	25067181	45752282	45611663	35955641
2225	25210	35260046	31055216	29145155	17978449	19496553	13625866	20760813
3225	25210	17345424	25511324	0	0	0	0	0
1125	25230	1704	1803	147	41	3872	6096	9672
2125	25230	7979	7284	8168	8611	9876	7966	8694
3125	25230	7161	5538	0	0	0	0	0
1225	25230	480188	524405	45951	13087	1213565	1793143	2853871
2225	25230	2444928	2318332	2612289	2803182	3358049	2404564	4403809
3225	25230	4201686	6987178	0	0	0	0	0